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SEMEIOLOGY AND DIAGNOSIS

OF

DISEASES OF CHILDREN

TOGETHER WITH

A THERAPEUTIC INDEX

BY

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DISEASES OF THE GENITO-URINARY ORGANS.

SEMEIOLOGY OF THE URINE.

ALBUMINURIA. A normal urine, as is known, does not contain albumen, therefore, albuminuria is a pathological condition. As an exception to this rule, however, we have the so-called *physiological albuminuria* which occurs in childhood not less frequently than in adult life. Leroux* examined the urine in three hundred and thirty (330) healthy children under sixteen years of age and found albuminuria in nineteen cases (nine boys and ten girls of age between six and fifteen years), that is, in one of seventeen; but in adults Leube found albumen in the urine in one case in nineteen. In Leroux' cases constant albuminuria was met with twice, periodical (albumen in the urine only after meals and forced movements) in fourteen cases.

It is not always easy to recognize physiological albuminuria, because a constant observation of the given person is first of all necessary for this purpose, in order to have time to be convinced that he is entirely well, that is, that albuminuria is not a symptom of a beginning kidney lesion; the patient further must not show indications of dropsy or cardiac hypertrophy, or a tense pulse.

The more time elapsing from the moment the albumen was detected in the urine, no other pathological evidences being seen in the urine, the more reason we have to regard such an albuminuria as physiological.

In the majority of cases there is very little albumen in the urine in physiological albuminuria, so that boiling gives only turbidity, but not coagula (less than 0.1). Albumen appears in

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such cases only at a certain time of the day, especially after meals and forced movements—*periodical albuminuria.*

In those cases where there is a comparatively large amount of albumen (however, hardly ever more than 0.2), it is also discharged with the morning urine; but, at any event, it is characteristic of physiological albuminuria that the albumen disappears in the night urine in almost all cases, until after the given person has slept, hence the name *cyclic* or *postural albuminuria.*

As an important distinctive sign of physiological from the pathological albuminuria, Pavy points out the especial peculiarity of the albumen; in the former case it is precipitated by organic acids (citric and acetic acids), while in pathological albuminuria the addition of these acids without boiling always proves negative.

The turbidity in a normal urine depends upon nuclein which, of course, also occurs in pathological urine, so that an absolute diagnostic meaning cannot be attached to Pavy's sign; but the main thing is that in pathological cases the albumen of the blood serum does not become precipitated by acetic acid, and in cases of physiological albuminuria it is the nuclein. If the urine besides albumen also contains blood, even in the smallest quantity, then physiological albuminuria may be excluded. The same takes place in case the microscope detects the presence of granular casts and lymphoid cells, but a scanty amount of hyaline casts alone does not exclude physiological albuminuria.

Physiological albuminuria is not synonymous with a periodical albuminuria, because the latter may also have a pathological meaning, as, for instance, where it depends upon renal calculi. In such a case one can almost always notice the presence of sand consisting of uric acid in recent urine. Further of importance may be the circumstance that, in physiological albuminuria, the albumen appears daily at a certain time, whereas in the case of renal sand the periods of albuminuria are sometimes separated by intervals of many days' duration. Sometimes the elimination of sand is accompanied by painful micturition or an attack of severe abdominal pain(renal colic). However, complete absence of subjective symptoms does not exclude renal albuminuria. If in periodical albuminuria the urine sometimes contains, besides

albumen, also blood, then the existence of renal sand may be held as proven, as well as when the urine contains pus corpuscles which are indicative of pyelitis. In other cases a periodical albuminuria remains persistent for a long time after acute nephritis, but in such an instance it usually disappears after from six to twelve months. It is possible that in these cases a chronic form of nephritis may finally develop.

[*Cyclic* albuminuria, or *rising* albuminuria, *postural* albuminuria, is also called *orthostatic albuminuria.* This occurs equally in both sexes. It occurs in neuropathic and slightly anæmic adolescents presenting a nervous or diathetic heredity, and is always associated with an appreciable disturbance of the vasomotor system.

Orthostatic albuminuria seems to be due to a fluctuating congestion of the kidney, a vasomotor disturbance of the renal circulation. It may be compared to the cyanosis of the extremities which is produced by the same cause. Aubertin and Rogers reported five cases of distinctly orthostatic albuminuria following scarlet fever. Aubertin believed it to be the terminal stage of a previous nephritis and a disturbance in the circulation of the kidney (Beck)* Somewhat similar explanation is offered by Arthur R. Elliot in his article, "Cyclical Albuminuria."**—EARLE.]

Generally speaking, albuminuria of itself does not prove anything and has no definite value in the diagnosis, because it occurs in very many conditions and under the influence of different causes. This symptom is especially valuable only when associated with other evidences exhibited by the patient.

If the albumen be mixed with the urine at the moment of its secretion by the kidneys, then one speaks of *renal or true albuminuria*, if, however, albumen appears in the urine because of admixture of pus or blood outside of the kidneys, then we have *spurious (false) albuminuria.*

It is not difficult to distinguish true albuminuria from a false one, because, in the former, the microscope almost always

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*Harvey G. Beck: "Orthostatic Albuminuria." *Am. Jour. Med. Sci.*, September, 1903, pp. 470, 471.

***Med. Rec.*, December 12, 1903.

shows the presence of urinary casts, and should they be difficult to be found in the mildest cases of renal albuminuria, one may nevertheless easily exclude false albuminuria by the absence of pus and blood in the urine.*

We conclude about the existence of false albuminuria by the fact that, aside from the admixture of pus or blood, we do not find any casts and comparatively little albumen (not more than one-half of the volume of the urine). If false albuminuria be dependent only on the admixture of the pus, then the ratio of the amount of albumen (which is determined with Esbach's albumimeter for one thousand parts of urine) to that of pus corpuscles, must in one cubic millimeter of the sediment not exceed 1 :50,000, that is, if in one cubic millimeter of sediment containing 50,000 pus corpuscles, the quantity of albumin in the filtered urine exceeds one pro mille, then it means that the albuminuria in such a case depends, not on the admixture of pus alone; but if there be pus and blood in the urine together, and the quantity of albumen is so great that it does not apparently correspond to the mentioned admixture, and, besides this, casts also appear, then we have to deal with a mixed albuminuria.

If the existence of true albuminuria be proven, then it yet remains to determine upon what cause it depends. In this regard the question may be decided in the easiest way if all renal dis-

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*From a common albuminuria one must definitely distinguish *peptonuria,* because elimination of pepton with the urine has an entirely different meaning than elimination of albumen of blood serum. *Pepton has no relation to lesion of the kidneys,* but points toward chemical alterations of the blood, and often therefore appears in the urine without albumen, by which fact the examination of urine for pepton is considerably aided. If the urine gives no sediment either on boiling, or from nitric acid, but gives turbidness from metaphosphoric acid, this means that it contains pepton. (For preparing a solution of metaphosphoric acid it suffices to soak a small piece of the acid for a few seconds in fifteen grams of water; this solution is added to the urine by drops). If the urine contains albumen, then the latter is also precipitated by this solution, therefore it must be first of all removed. Peptonuria most often occurs in the case of existence in the body of pus foci, *pyogenic peptonuria,* and eventually may be of avail for the differential diagnosis, for instance, of purulent pleurisy from the serous form, or acute purulent meningitis. In adults, pepton is also found in scurvy—*hæmatogenic peptonuria,* in intestinal ulcers—*enterogenic peptonuria* and in *acute rheumatism.* It follows, that before any diagnostic conclusions be made on the ground of the pepton in the urine, these processes must be excluded. I have not found in literature special investigations as to peptonuria in childhood.

eases be divided into acute and chronic. To the former belong acute parenchymatous nephritis and its concomitant—glomerulo-nephritis; acute interstitial nephritis; and, finally, the mildest of the renal lesions—desquamative nephritis or renal catarrh, which clinically occurs as an acute hyperæmia of the kidneys, and the so-called cloudy swelling and granular degeneration of the renal epithelium.

To the chronic lesions belong chronic parenchymatous nephritis, amyloid degeneration of the kidneys, renal cirrhosis (the primary chronic interstitial nephritis), congested kidney and malignant new growth (sarcoma or carcinoma) in the kidneys.

The question as to whether we have to do with acute or chronic albuminuria is decided by the history; in the former case it lasts from a few days up to two or three months; in the chronic form a few months and even years.

Acute albuminuria in childhood most often depends upon ACUTE PARENCHYMATOUS NEPHRITIS which usually develops simultanously with *glomerulo-nephritis,* or upon the latter alone. Albuminuria of itself does not at all prove the existence of nephritis; for this it is necessary to establish the presence in the urine of other inflammatory products; white, and frequently also red, blood corpuscles, different casts, (hyaline, granular, blood and epithelial), as well as fatty degenerated cells of the renal epithelium. As to the hyaline casts, these occur during each true albuminuria, and therefore do not prove a nephritis, at least when they occur in small quantities.

It is easy to recognize nephritis in the great majority of cases even without a microscopical examination of the urine, namely on the ground of albuminuria, the microscopical properties of the urine and the accompanying symptoms as well.

The quantity of the urine is decreased considerably (the less the quantity, the graver is the nephritis; in the presence of complete anuria during twenty-four hours the prognosis is always very ominous); it is already turbid when discharged because of admixture of organized elements (casts and cellular elements); and when the urine stands some time it becomes still more cloudy because of a uric acid deposit which gives an abundant, dirty-colored sediment. The color of the urine is *dirty-*

brown or bloody, due to the admixture of blood. The *specific gravity* is considerably increased. *It is very rich with albumen* (in the majority of cases the albuminous sediment in Esbach's tube occupies five or six divisions (½ per cent.), but in severe cases the amount of albumen reaches up to one and even two and a half per cent).

Subjective complaints may be entirely absent, but pain is sometimes felt in the region of the kidneys, increasing upon pressure. Often there is observed a frequent desire to urinate, only small portions of urine being voided each time.

In the case of fever (acute nephritis may also exist without elevation of temperature) the patient complains of headache and other symptoms of fever. On account of the retention of water in the organism and hydræmia there frequently develop œdemata of the cellular tissues, first of the face (eye-lids) and the feet and then of the whole body, as well as of the serous cavities, of which most often and first of all the peritoneal cavity becomes affected (ascites), more rarely the pleura, pericardium and the cerebral ventricles.

Observation shows that subcutaneous dropsy (anasarca) is most often met with and is especially pronounced in scarlatinal nephritis (probably because of previous alteration of the walls of the skin-capillaries under the influence of the scarlatinal virus); while nephritis due to other infectious diseases is either not accompanied by dropsy at all, or the latter is not marked.

It is to some extent characteristic of renal dropsy that it is very changeable; to-day œdema is more evident on the face; to-morrow around the ankles or the abdomen, etc.

The accumulation in the blood of products of metabolism which are retained in the organism because of the impaired activity of the kidneys give rise to the complex of symptoms known under the name of uræmia. The chief symptoms of the latter are headache, vomiting and general convulsions with the loss of consciousness, often followed for a short time by blindness. To the occasional symptoms of acute nephritis belongs dilatation with hypertrophy of the heart developing within a few days.

In the generality of cases nephritis ends with recovery in approximately from three to six weeks, but sometimes death

ensues because of the considerable dropsy (œdema of the lungs, larynx) or uræmia, or because of complications to which nephritis easily leads (pneumonia, purulent pleurisy and inflammation of other serous membranes).

The prognosis in nephritis is the less favorable the smaller the amount of urine and the richer the same is with albumen; on the contrary, a greater or less admixture of blood is of no especial prognostic value.

In childhood acute nephritis very rarely becomes chronic; it happens with comparatively more frequency that albuminuria becomes protracted for a few months, but finally this also passes away.

Excretion of water and transudation of albumen takes place in the glomeruli; in the tubuli—desquamation of epithelium and the formation of casts; in the interstitial connective tissue—emigration of lymphoid elements. Thus, if the urine be very scanty, but very rich with albumen and poor in casts and epithelium, then one may regard the glomeruli to be chiefly affected (glomerulitis); if, however, there is no correspondence between the small quantity of urine and the great amount of casts, and there is much urine, then parenchymatous nephritis is probable; the more pus corpuscles in the urine, the more is the interstitial connective tissue affected.

In judging the tufts or the tubular epithelium a more extended anlaysis is required. Guessler* recommends attention to the rapidity of elimination of potassium iodide by the kidneys. According to his observations five grains of potassium iodide are excreted by healthy kidneys in approximately eleven hours; the same duration will also be observed in pure glomerulitis; but if the epithelium also be involved, then the elimination of potassium iodide will be retarded in proportion to the involvement of the parenchyma of the kidney.

Causes. The most frequent cause of acute nephritis is scarlet fever, which gives more cases than all other causes put together.

Scarlatinal nephritis seldom sets in from the first days of

*"*Vratch,"* 1898, No. 26 and 27.

the disease, that is, during the febrile period, but usually in the period of desquamation, from the tenth up to the twentieth day, and occasionally during the following three weeks. This cause may usually be recognized even without the history, namely, through the characteristic desquamation of the epidermis, especially on the fingers and the hands. This symptom assists in determining the ætiology of nephritis even in the mildest cases of scarlet fever which remain unrecognized or overlooked by the parents. These mild cases of scarlet fever must always be remembered when nephritis appears in a child without any evident reason, *because it almost never develops from an exposure to cold* (we insist upon this, despite the opinion of Barthez and Sanné, that in children nephritis due to exposure to cold occurs much oftener than in adults), while all other ætiological factors may be easily found out from the history. To such varied causes belong, first, all other acute infectious diseases, severe (typhoid fever, relapsing fever, measles, *diphtheria**, smallpox) as well as mild ones (*varicella,* mumps and an insignificant fever running with inflammatory swelling of the neck-glands —Pfeiffer, Heubner); secondly, various drugs leading occasionally to *toxic nephritis.* [Acute nephritis also occurs not infrequently in children during influenza, and even more quickly and violently than in scarlet fever, diphtheria or other infectious diseases (Rathford)**—Earle.]

Of the external remedies to be included here are:—tar, iodine (when the latter covers large surfaces of the skin in small children) balsam of Peru, Spanish fly; and of internal remedies, turpentine oil (after large doses of turpentine resinous substances are eliminated with the urine which upon boiling may become cloudy because of the presence of these substances; the turbidity disappears upon the addition of alcohol or, which is still better, of ether, while a true albuminuria lacks this property), sodium salicylate and potassium chlorate (hæmoglobinuria).

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*Diphtheritic nephritis differs from the scarlatinal by the urine never containing blood, and by the general dropsy and uræmia belonging to the great rarities.

***Medical News,* March 15, 1902.

On consideration of the given signs the diagnosis of acute nephritis is not difficult. By the macro- and microscopical peculiarities of the urine it differs from the *renal catarrh* (desquamative nephritis or febrile albuminuria) which occurs in many febrile diseases, especially infectious ones, during the period of the highest fever. Although the quantity of urine in febrile albuminuria is less than normal (according to the fever), yet it remains clear, containing very little albumen and, when freshly voided, does not give any deposit. Being almost free from morphological elements it does not contain either colorless or red blood corpuscles, but renal epithelium may be present. Of casts only the hyaline and epithelial ones are met with in small quantity.

Albuminuria lasts only a few days, disappearing with the lapse of fever. Dropsy and uræmia never develop.

To the same category also belongs albuminuria which occurs so often in the *first period* of scarlet fever, while an actual nephritis (glomerulo-parenchymatous nephritis) usually develops in the period of desquamation, therefore, it is called *subsequent nephritis.*

Acute interstitial nephritis occurs in pyæmia and severe scarlet fever, being characterized by abundant infiltration of the interstitial connective tissue of the kidneys with lymphoid elements and by the formation of miliary abscesses. This morbid form is rather of pathologico-anatomical interest, because clinically, that is, on the ground of the properties of the urine, it may easily be confused with acute parenchymatous nephritis. At any rate, if during any pyæmic process nephritis arises, and a comparatively large quantity of pus appears in the urine, while any indications pointing toward affection of the bladder be absent, then one must suspect purulent nephritis with the opening of the abscess in the renal pelvis.

Nephritis is to be suspected in each case of *dropsy,* although examination of the urine in such cases does not always clear away all question. For instance, scarlatinal patients sometimes become affected with general dropsy (subcutaneous and abdominal) in the period of recovery, yet, notwithstanding this, their urine does not exhibit any signs of nephritis: the specimen is

clear, does not give a sediment, is voided in sufficient quantity and contains only traces of albumen without any organized elements. The query arises, is it possible in such cases to suppose inflammation of the kidneys or not? That there really occur cases of nephritis without albuminuria and casts has been proven beyond doubt by several necropsies (whether the albuminuria was absent during the whole course of the disease only remaining unknown). But such cases are very uncommon and it is almost always possible to detect in these instances, first, the considerable diminution of the quantity of the urine, and, second, that the urine was cloudy and gave an abundant sediment of uric acid; while in cases of the dropsy in question, the urine is pale, transparent and of normal amount, so that it is very probable that the cause of dropsy in such cases is not nephritis. This is also confirmed by the fact that such patients usually recover very soon.

As to insignificant albuminuria occurring in some cases, it may be explained by the œdema of the kidneys. If the absence of albuminuria depended in such patients upon the complete inactivity of the diseased kidney, while the other one remained healthy and secreted a normal urine, then altogether incomprehensible would be the absence of albumen and casts in the period of convalescence, when the sick kidney began to act again. It is impossible to suppose that a grave inflammation could so suddenly disappear after it had caused a complete, although temporary, stoppage of the physiological function of the kidney.

Heart lesion, during the period of imperfect compensation, may also lead to general dropsy, albumen then appearing in the urine because of venous stasis in the kidneys. The diagnosis is usually not difficult, being based upon the objective symptoms of disease of the cardiac valves; on the manner of development of the dropsy, which always begins from the ankles and then spreads upwards; as well as on the peculiarities of the urine (see chronic parenchymatous nephritis).

In the case of *uræmia* nephritis may be mistaken for meningitis. In both cases the attacks begin with headache, followed by vomiting, sometimes even by retarded and irregular pulse, and after that by general convulsions (sometimes unilateral) and

somnolency with wide, non-reacting pupils. But similar as attacks of uræmia may be to those of meningitis, nevertheless in the presence of nephritis it is more reasonable to suspect uræmia than any other cerebral lesion. A mistake is possible only when the physician has overlooked the albuminuria, which may easily happen in case of nephritis with a latent course, that is, if there be absent subjective symptoms on the part of the patient as well as œdemata.

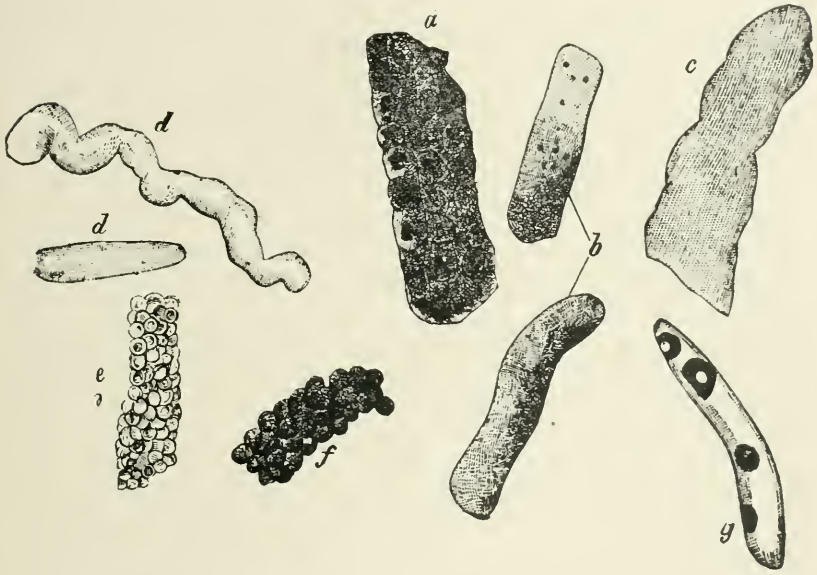

Fig. 53—Urinary casts in nephritis; a—epithelial; b—granular casts; c—waxy casts; d—hyaline casts; e—hyaline cast with blood corpuscles; f—cast with colorless blood corpuscles; g—hyaline cast covered with epithelial cells and colorless blood corpuscles (Sahli).

Chronic albuminuria occurs in children but rarely, being observed in persons exhausted by some purulent condition in the bones or joints. The main cause of albuminuria in such cases is amyloid degeneration of the kidneys, either alone or complicated with parenchymatous nephritis.

CHRONIC PARENCHYMATOUS NEPHRITIS is, in reference to the properties of the urine, very similar to the acute form; little urine, much albumen (the greatest quantity we have seen gave

twenty-five divisions according to Esbach, that is, 2.5 per cent.); the urine is cloudy, often stained with blood and gives a rich deposit containing many different casts, together with pus corpuscles, and uric acid salts. The specific gravity is normal or rather increased.

The distinction from acute nephritis consists only in that the quantity of urine, in chronic nephritis, is not so markedly decreased, and that dark, granular casts predominate in the sediment. (Fig. 53.)

General dropsy and uræmia belong to the common symptoms of chronic nephritis.

The properties of the urine, as to the degree of albuminuria and the quantity of the sediment, casts, etc., vary in chronic as well as in acute nephritis, and depend partly on the severity of the disease, partly, however, on the region that is most affected; the glomeruli, epithelium, or the connective tissue. Undoubtedly cases occur in which the clinical characteristics must be referred to the category of *chronic glomerulo-nephritis*. In one such case, a three-year-old girl, who was in our clinic during the winter of 1894, exhibited the following leading symptoms: A small amount of urine (on entrance 150 to 200 grams); an immense amount of albumen (15 to 25 parts in 1,000) and very scanty sediment in which, besides the uric acid salts, the microscope revealed, almost exclusively, hyaline casts and a small quantity of lymphoid elements. The disease started in the form of acute nephritis five months before, the patient entering the hospital on account of pronounced anasarca and ascites. In favor of glomerulitis, and against a considerable affection of the epithelium, was the absence of epithelial and granular casts. It was impossible to here admit amyloid disease of the kidneys because of lack of causative factors.

If chronic inflammation of the kidneys be observed in a child suffering with some chronic suppurative process in the bones or in the soft parts (Pott's disease, caries of the long bones, tuberculosis of the joints, empyema), or with a pronounced syphilis (hereditary), or long-standing rachitis, or consumption, then AMYLOID must be thought of; and if in a given child amyloid of the liver or the spleen, or of the latter alone, be found in the presence of the mentioned ætiological influences, then the

diagnosis of amyloid of the kidneys is rendered almost certain, even if the urine be characteristic of parenchymatous nephritis.

The ætiological diagnosis of amyloid kidney we esteem of primary importance because the urine in this disease does not exhibit constant peculiarities; in some cases it is scanty, loaded with albumen, dark and gives an abundant sediment, while in other cases it is discharged freely, is entirely clear and pale, and of low specific gravity. The difference depends, chiefly, upon the spreading of the process (in the beginning only the glomerulous vessels become involved, and after that also the arteries of the tubules and even the renal epithelium); and likewise whether the amyloid kidney be complicated or not by parenchymatous nephritis.

More characteristic of pure amyloid is the discharge of *light, transparent* urine of low specific gravity; with a *considerable* amount of albumen, but without any sediment. Despite the normal amount of urine, dropsy is usually very pronounced, not because of retention of water by the kidneys, but rather in consequence of cachexia due to chronic suppuration or amyloid degeneration of the liver and other organs. As long as the general nutrition does not suffer extensively dropsy is absent.

Hypertrophy of the heart and uræmia are absent in uncomplicated amyloid degeneration of the kidneys, but when complicated by parenchymatous nephritis then the development of uræmia is very possible.

In CONGESTED KIDNEY (passive hyperæmia) the urine in its microscopical properties is very similar to that in parenchymatous nephritis; it is dark, of red color, is secreted in considerably diminished quantities, is of high specific gravity and when cooled gives an abundant sediment of uric acid salts. Under the influence of heart lesion there may be general dropsy and hypertrophy.

The differences are that, in congested kidney *albumen,* as well as casts (only hyaline) are scanty; inflammatory products, that is, lymphoid elements and red blood corpuscles are almost absent (a considerable admixture of blood denotes a complication with parenchymatous nephritis or infarctus).

Characteristic of congested kidney we have *the changeableness of the properties of the urine, depending upon the condi-*

tion of the heart activity. If through the action of drugs, or other causes, the heart begins to work better, then the quantity of the urine increases rapidly, it becomes clearer and the albumen disappears. If the albuminuria be persistent, despite the restoration of the heart activity and the disappearance of all symptoms of stasis, then one may look upon albumen in the urine as the consequence of nephritis.

One should bear in mind that congestion albuminuria may set in also without any heart lesion, for instance, during failure of the heart after acute infectious diseases, especially after scarlet fever, or because of stasis of the blood in pulmonary diseases, especially in grave pleurisies.

The diagnosis of congested kidney is considerably aided by the presence of causative relations, that is, some heart affection, as well as by appearance of venous stasis in other organs, especially in the liver. As the liver responds to cardiac weakness much easier than do the kidneys, then enlargement of the liver may be held as a necessary concomitant symptom of congested kidney.

Uræmia is always absent in congested kidney when this is not associated with nephritis.

Primary interstitial nephritis is a great rarity in childhood. In a single case that was observed in our hospital the patient exhibited quite in detail the same symptoms that characterize this form of nephritis in adults.

The correct diagnosis was confirmed by the necropsy, and was made especially on the ground of cardiac hypertrophy, roughness of the arteries accessible to palpation and the properties of the urine, which was *abundant, clear,* almost as water, *poor in albumen* and did not give a sediment. Dropsy *was absent.* The necropsy showed a pronounced granular atrophy of the kidneys, hypertrophy of the left heart, sclerosis (which was proven as a real atheromatosis) and unequal thickening of the arterial walls, especially of the cerebral vessels, hæmorrhage under the ependyma of the right ventricle.*

Hæmaturia. The presence of blood in the urine may, in

*This case of a twelve-year-old boy was minutely described in *Medic. Obozrenie,* Vol. XVII., 1882, page 911.

most cases, be recognized by mere inspection of the urine, which is stained a bloody or red-brown (because of methæmoglobin) color. Every doubt concerning the presence of blood in the urine may be removed by a microscopical examination, as the well-preserved blood corpuscles are easily found in any drop of the urine. If, despite the blood-red color of the urine red corpuscles are absent, notwithstanding the presence of albumen, then it means that we have a condition without pure blood in the urine, but with hæmoglobin—*hæmoglobinuria*.

Chemically the presence of hæmoglobin (or blood) in the urine may be proven by Heller's test. If the urine contains blood or hæmoglobin, then on boiling, after potassic hydrate is added, flakes of phosphates are precipitated, throwing down the pigment and becoming therefore stained of a blood-red color.

In some cases the urine becomes of bloody color notwithstanding the complete absence of blood. Such a urine is observed, for instance, after the internal use of chrysophanic acid (rhubarb and folia sennæ), provided the urine be of alkaline reaction. Heller's test does not furnish positive results in such cases, because the precipitated phosphates also throw down the pigment, becoming stained a reddish color, although of another tint than from blood. The question becomes decided much easier through the addition of acid; bloody urine gives, with nitric acid, the reaction of albumen, while the red urine due to foliæ sennæ becomes discolored from the addition of some acid, but returns to red again upon the addition of ammonia.

Dark urine from *carbolic acid* readily occurs in children even upon the external application of the latter. It differs from bloody urine, first, by not containing albumen, and, second, by its color being of greenish tint.

More like bloody urine is that very rich with *indican*. Such a urine appears when the blood contains much indol, and as the latter is one of the products of suppuration of albumen, then the indican-urine occurs in all those cases where suppurating albuminoid substances have accumulated, for instance, sanious exudations in the pleural cavities or peritoneum, or accumulation of fæces in the bowels.

A very dark urine is observed in intestinal obstruction and

peritonites. In Pollak's* case, a black urine was observed in tuberculosis of the intestines and peritoneum occurring in a ten-year-old girl (during a few months); the specific gravity varied between 1008 and 1030; the reaction was alkaline; the amount of urine 100 to 300 c. c. The freshly voided urine was clear and transparent, sometimes of yellowish-red, sometimes brownish color, but after it stood awhile it soon began to grow dark, while the darkening spread from above downwards and reached its maximum on the fourth day. Along with darkening the urine grew turbid and gave an abundant sediment of phosphates. After the urine became dark it retained this color for many days. The degree of darkening of the urine varied on different days and at times would disappear altogether. In this case the urine did not contain albumen, pus, blood or biliary pigments or aceton and sugar; but was always rich with indican; the tests for melanin and phenol proved negative; by ether, alcohol or choloroform the black pigment could not be extracted, but could be precipitated by subacetate of lead and barium salts or by lime water. The nature of the pigment could not be determined, but it was beyond doubt not identical with indican, because the two constituents could be separated from each other. During the post-mortem no melanotic tumor was found; only tuberculosis of the bowels and peritoneum.

We add that dark urine in peritonitis was also observed by Litten** and Senator.***

For determining indican it is transformed into indigo, for which purpose a few cubic centms. of urine are mixed with an equal volume of fumans hydrochloric acid, then about two drops of concentrated solution of chlorinated lime are added and then some chloroform. The latter becomes deposited and, by extracting indigo, becomes stained a bluish color.

If the presence of blood in the urine be proven, then it remains to determine the source of the hæmorrhage. The blood may come from the urethra (or from the vagina during menstruation in girls twelve to thirteen years of age), from the

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*_Revue mensuelle des mal. de l'enf._ XI., 1893, page 519.

**_Deut. Med. Woch._, 1889, No. 3.

***_Charité Annal._, 1890, B. XV.

neck of the bladder, from the mucous membrane of the bladder itself, from the renal pelvis and ureters, from the kidneys and finally simultaneously from different portions of the urinary organs.

Hæmorrhage from the urethra, or the vagina, may be easily recognized by the blood oozing from the urethra (or vagina) in the intervals between micturitions, so that the clothes are stained with pure blood. In the case of an insignificant hæmorrhage, one can press out from the urethra at least a couple of drops of pure blood. If, together with the urine, thread-like coagula are discharged and it is desirable to find out if these come from the urethra or the ureter, then the patient is asked to pass water in two separate glasses: in the event of the urethral origin of the coagula these will be found only in the first portion of urine, while the second portion will be free from blood.

In childhood urethral hæmorrhages are rarely observed and only after some trauma, for instance, contusion, rough catheterization, introduction of foreign bodies, etc.

Hæmorrhage from the neck of the bladder is characterized by the blood appearing only during micturition, and at its very end, in the moment of contraction of the sphincter. The patient ceases urination, and only then a few drops of pure blood appear, usually accompanied by considerable pain.

Two such cases observed in our clinic happened in two boys, eight and ten years respectively, who had suffered with tubercular cystitis. The urine of both was of acid reaction, but turbid, because of abundant admixture of pus elements.

Hæmorrhage from the bladder and kidneys may be easily differentiated from the former by the urine being equally bloody at the beginning, as well as in the end of urination; but only considering the properties of the urine the source of the hæmorrhage cannot always be determined.

As hæmorrhage from the bladder in childhood is almost exclusively connected with bladder stones, and perhaps also with tuberculosis of the urinary organs, therefore, signs of cystitis are characteristic accompaniments; that is, the ammoniacal odor of the urine (in tuberculosis this odor is absent, because the urine remains acid) and the sediment which consists of pus and blood corpuscles, crystals of ammonio-magnesic phosphate

("coffin-lid shaped") and bladder epithelium. Micturition is painful because of bladder spasms.

The presence in the urine of thread-like blood coagula, unless there is a hæmorrhage from the urethra, points toward the ureters or the pelvis of the kidney as the origin of the blood.

As to renal hæmorrhage this is well indicated by the presence in the sediment of microscopical blood-casts (casts of the tubuli Bilinii); the blood becomes very intimately mixed with the urine and therefore no noticeable blood coagula are seen. In renal hæmorrhage the urine, after having been filtered, nevertheless contains much albumen; while, when the blood is mixed with the urine in the urinary passages, filtration almost entirely clears the blood and albumen from the urine (provided there is no nephritis).

Hæmaturia in children still oftener appears as a symptom of nephritis and, in such a case, urinary casts necessarily occur as well as other symptoms of nephritis; however, it sometimes happens that we see blood mixed with the urine in convalescent scarlatinal patients, in the absence of any other signs of nephritis, so that one must then infer a *hyperæmia of the kidneys* not reaching the degree of inflammation.

Furthermore, blood in the urine may be the result of trauma or a symptom of the hæmorrhagic diathesis; for instance, in Werlhoff's disease, hæmorrhagic small pox, etc. The diagnosis of such cases is, of course, not difficult in view of the concomitant symptoms.

It is sometimes much more perplexing to find the cause of *periodical renal hæmorrhages* which occur in seemingly entirely healthy children. Such a hæmorrhage may be repeated after varying intervals of from a few days up to many weeks. In one case of a very abundant renal hæmorrhage I diagnosed inherited hæmophilia, because the patient (a boy), of about five years, was, before the hæmaturia, entirely well, and so he was later on, while in his history it was noted that a year before he nearly died from a hæmorrhage from the cheek, after falling against a sharp-pointed piece of wood which caused a slight tear of the skin.

In other cases periodical renal hæmorrhages may depend upon a beginning renal cancer or on renal sand and renal stones,

or upon a stone in the bladder, or tuberculosis of the kidneys.

It rarely occurs that hæmaturia is the first symptom of *carcinoma,* commonly appearing only when the new growth becomes of considerable size so that the diseased organ can be palpated in the abdomen as a tumor. If hæmaturia appears as the first symptom of carcinoma, then the diagnosis cannot be well-established until the tumor is made out; the general aspect of the patient does not decide the matter either, because cachexia develops late.

If periodical hæmaturiæ be repeated in the course of several months it is then most probable that the patient has no cancer, because the same would have time during such a period to develop into a palpable tumor or, at least, would lead to considerable exhaustion. It is more reasonable to suppose *renal sand* in such cases, the value of which, in the ætiology of infantile hæmaturia, was first pointed out by Kjelberg.* It is obvious that the presence of renal sand in the chamber-vessel is a very important item in the diagnosis of this form of hæmaturia, but only in the event that the sand be observed in the freshly voided, *warm* urine; if, however, the same be precipitated in urine which has stood several hours, then its significance is null, because it may, in such a case, be the result of acid fermentation of the urine.

Furthermore, pro renal sand and partly contra carcinoma we have the admixture in the urine of epithelium from the pelvis of the kidneys (the epithelium is like the tiles of a roof) or that of pus elements denoting pyelitis, as well as severe pain in the abdomen accompanying renal hæmorrhage, especially if pain and hæmorrhage too often appear after physical exertion; on the contrary, against sand and pro carcinoma is the too abundant hæmorrhage. It is evident that absence of urinary sand in the freshly voided water may be misleading, if the observations are made at long intervals. However, under contrary circumstances one cannot be sure that the patient has no renal calculi, especially if he be subject to attacks of renal colic, which are not very uncommon in childhood after seven years.

Tuberculosis of the kidneys and their pelves is usually accompanied by nephritis, or, at least, by pyelitis; therefore, pus

Oestr. Jahrb. f. Paediatr., 1873, S. 49.

corpuscles and different casts are usually detected in the urinary sediment as well as tubercle bacilli.

As to periodical hæmorrhages from the bladder due to a calculus, the latter usually early begins to cause attacks of dysuria which directly point toward the necessity of examining the bladder with a sound.

Periodical hæmaturia must be clearly differentiated from *periodical hæmoglobinuria.* Red-bloody urine free from blood corpuscles, but rich in hæmoglobin, appears as a prominent symptom of a separate disease known under the name of *paroxysmal hæmoglobinuria.*

This disease is marked by the sudden voiding in an entirely healthy person of seemingly bloody urine, in which Heller's test proves the presence of blood-pigment despite the complete or almost complete, absence of red blood corpuscles. Albumen in greater or less quantities may always occur in such cases. Its elimination lasts a few days after the disappearance of the hæmoglobinuria. Any subjective complaints may at the same time be absent, but once in a while, an hour or two before the appearance of hæmoglobinuria, the patient will have an attack of fever with chills and subsequent rapid rise of temperature up to 39 to 40 degrees C. (102.2 to 104 degrees F.); a few hours later the paroxysm ends and the temperature falls to the normal standard.

The causes of hæmoglobinuria remain in many cases unknown, the attacks of bloody urine appearing, in a given person, after various intervals of time from entirely unnoticeable causes. In other cases the attack always happens as a result of some cause and it may then be produced artificially. Of these causes the influence of cold is the most common. There are persons who manifest hæmoglobinuria every time they put their feet into cold water. In other cases hæmoglobinuria appears because of physical exertion. A simple, that is, not paroxysmal, hæmoglobinuria may be the consequence of poisoning or infectious diseases (scarlet-fever, Winckel's disease), as well as in scurvy, hæmophilia, etc. Of inorganic poisons causing hæmoglobinuria, the best known are potassic chlorate and phosphate. In one case of Bokaj hæmoglobinuria in a seven-year-old girl suffering with

intermittent fever would appear every time after the taking of quinia; when the latter was stopped hæmoglobinuria did not return, notwithstanding that the paroxysms of fever still continued.

Pyuria. If the urine contains pus then it is cloudy when excreted and after standing for a while gives a whitish sediment in which it is easy to find, under the microscope, a great quantity of pus corpuscles. Upon shaking the sediment with an equal quantity of a potassic hydrate solution, a jelly-like mass is obtained (alkaline fermentation of the urine causes a similar mass to be formed at the bottom of the vessel). A purulent urine always contains albumen; if the latter be absent, notwithstanding the apparent purulent aspect, then it means that the urine does not contain pus, but mucus or salts. In the case of mucus there is also found in the sediment, together with lymphoid elements, a great quantity of epithelium, and by the chemical examination one can determine the presence of mucin in the urine. (The urine becomes cloudy from the addition of acetic acid and clears up with hydrochloric acid or potassic hydrate.)

A sediment similar to pus or mucus may be formed in acid urine from urates; in alkaline, from phosphates. The former disappear upon boiling; the latter upon acidulation.

If the turbidity of the urine does not disappear either upon heating, or upon acidulation, or does not become precipitated, it then depends upon the presence of great quantities of microbes. If such a cloudiness appears in a urine which has stood and commenced to ferment, then it is of no value; if, however, the urine be cloudy when eliminated, or begins to decompose very rapidly, then it is pathological.

Cloudiness of the urine due to abundant amount of bacteria, and even the ammoniacal odor of a fresh urine, does not yet prove the existence of a vesical catarrh or cystitis, as similar manifestations may be produced by some microbes which are able to multiply in the urine and decompose the urea, but which, nevertheless, are not pathogenic. Such cases are described under the name of *bacteriuria*. This is most often caused by the presence of bacterium coli commune. The urine in such cases is cloudy, does not give a sediment, does not become clear after filtration, has a disagreeable odor, and *acid* reaction (it may be alkaline in the presence of other microbes) and contains under the microscope

only movable rods of bact. coli, but there is neither pus, nor epithelium. The urine does not give a sediment, neither does it contain albumen. By the latter four signs bacteriuria decidedly differs from cystitis.

The bacteria reach the bladder either through the urethra, for instance, through catheterization, and in girls even without the introduction of an instrument, or through the kidneys, where they are brought by the blood. The latter method of penetration of microbes into the bladder occurs oftener then the former. This mode of entrance, for instance, is frequently seen in the diarrhœa of children (bact. coli. comm.), and sometimes also in constipations. Posner produced an experimental pyelitis by passing the bact. coli. comm. through the kidneys, having previously ligated the bowels of the animal.

[The modes of entrance of the bacillus colli commune are:

(1) From without—that is, through the urethra. This can be brought about by use of infected instruments or foreign bodies introduced into the urethra, or the bacillus may work its own way through the urethra when the area surrounding the urethra is infected. The latter condition is found especially in the female.

(2) From within, through the renal tissue. This has been demonstrated experimentally, by tying the intestine at the anus and ligating the urethra. The colon bacillus was found in the bladder and the kidney. The peritoneal fluid remained sterile, thus proving that the transmission of the colon bacillus did not occur directly from the intestine to the bladder.

(3) Also by continuity, when the infection passes directly from the intestinal tract to the bladder. Leopold and Levy report three cases of cystitis due to the colon bacillus, and they assert that the symptoms were *milder*, in general, than in similar cases where the strepto-staphylococcus is the causative agent.*—EARLE.]

Pus in the urine, the external sexual organs being healthy, (that is, neither balanitis, nor vulvo-vaginitis), denotes either cystitis, or purulent pyelitis.

To determine the source of the pus entirely on the ground

*_Archives of Pediatrics_, May, 1903. (Quoted from _Progressive Med._, 1904, March, p. 158.)

of the properties of the urine is not always possible; in former times it was commonly believed that the reaction of recently passed urine was alkaline in cystitis, especially in chronic cases, while acid in pyelitis, unless pyelitis complicated cystitis; but now it is known that not only in recent cases of cystitis, but very often even in chronic forms, the reaction may even be acid, because the reaction of the urine does not depend upon the cystitis itself, but on the properties of the microbes by which it is caused. Rowsing* showed that some microbes decompose urea, making the urine alkaline, while others do not decompose it, the urine remaining acid; to the former are referred staphylococci, streptococci, bacil. Hauseri, proteus, etc.; to the latter the tubercle bacillus, bact. coli. comm., Neisser's gonococcus, typhoid bacillus.

The microscope shows that the sediment in cystitis, as well as in pyelitis, also contains epithelium as well as pus corpuscles. Although the epithelium of the bladder has the shape of large, flat, angular cells with a distinct nucleus, while the epithelium of the pelvis of the kidneys is much smaller, appearing either in the form of round cells (from the deep layers), like lymphoid cells, but somewhat larger and with a distinctly visible nucleus (the nucleus of lymphoid corpuscles makes itself evident only after the granular protoplasm becomes clear from acetic acid), or in the form of conical and tailed cells, also of a very small size, much smaller than the bladder epithelium (Ultzmann); nevertheless, these signs are insufficient for the exact diagnosis, namely, because the bladder epithelium from the deep layers is very similar to the epithelium of the pelvis. It is more characteristic of pyelitis when these cells are eliminated in layers, arranged similarly to fish-scales.

Of the concomitant symptoms of cystitis that are notable, we have evidences of irritation of the bladder, especially pronounced in acute cases, in the form of painful and frequent micturition; while pyelitis may be manifested by pain in the kidney region, attacks of more or less considerable colic and sometimes by elimination of urinary sand. The presence of a disproportionally large amount of albumen in the urine, or of casts which point toward affection of the kidneys, is rather in favor of pyelitis.

**Die infekt. Krankheiten der Harnorgane.* Berlin, 1898.

The diagnosis may be also aided by the ætiology. Acute cystites develop after the use of some drugs as turpentine oil, or after applying and continuing a Spanish fly blister, as well as after exposure to cold. Chronic cystites most often accompany gravel, the presence of which may be easily detected by catheterization, or are due to retention of urine because of paralysis of the detrusor (Pott's disease). If pyelitis is not a sequel of cystitis, then it develops during the formation of renal sand which is not difficult of detection in the urine, even upon a hasty examination. If the patient previously suffered from periodic albuminuria, or if hæmaturia sometimes occurred, then it is in favor of sand. The presence of vulvo-vaginitis also indicates cystitis.

Tuberculosis may be the cause of cystitis as well as of pyelitis. It is somewhat characteristic for both that no cause may be detected in the history. Not uncommonly tuberculosis of the urinary organs arises as a primary affection. The differential diagnosis is chiefly based on the presence or absence of the bladder symptoms. In tubercular cystitis, especially in recent cases, of first importance is the frequent and painful micturition, the pain being especially severe at the end of the act, when there often appear a few drops of pure blood. Despite the admixture of blood and pus, the reaction of the urine always remains acid. To find tubercle bacilli in the urinary sediment is quite difficult and not always possible, therefore it is advisable to take advantage of the negative sign, namely, of the results of agar-cultures. If no colonies be obtained therefrom, then we have to do perhaps with a tubercular or gonococcus cystitis, because all other microbes causing cystitis would prove positive.

As tuberculosis of the bladder does not manifest an especial tendency of spreading to the inner organs, then tubercular cystitis may eventually last many years, yielding very poorly to treatment. Thus, in the diagnosis of tubercular cystitis, there may be of avail the apparent absence of the cause of disease, its long continuance and its obstinacy to treatment. The diagnosis is considerably aided if tubercular affection of the testicles or spermatic funiculi may be found, to which circumstances attention should aways be given in the case of cystitis, especially when the urine is acid.

Tuberculosis of the kidneys occurs in two forms: In one class we have miliary tuberculosis, in which there is an eruption of miliary tubercles in all the internal organs, among these, also in the kidneys; in another the kidneys become affected by a chronic tubercular process leading to their ulcerous destruction.

Only the second form may be the object of a clinical diagnosis, because miliary tuberculosis of the kidneys does not indictate itself during life-time by any special (renal) symptoms.

The most important symptom of renal tuberculosis rests with the properties of the urine, the bladder symptoms being absent. The urine is cloudy, of acid reaction, contains albumen, and sometimes also blood, and upon standing gives a sediment which consists of salts, *pus corpuscles*, and decomposed matter in which the presence of tubercule bacilli may be detected. Many such patients have fever and exhibit a tuberculous habitus, that is, they are very thin, pale, with enlarged lymphatic glands in the neck and in other parts; others, besides this, show symptoms of intestinal or pulmonary tuberculosis.

Lately attention has been aroused by cystites and pyelites due to affection of the bladder, as well as of the pelvis of the kidneys, by the intestinal bacillus—bacillus coli. communis. This microbe is not always equally pathogenic, but from what may be drawn from Rowsing's investigations (*l. c.*). one must hold that the mucous membrane of the pelvis becomes inflamed under its influence much easier than the mucosa of the bladder; although the so-called coli-cystitis (i. e. cystitis caused by bacterium coli. commune), undoubtedly exists. But it is also true that many cases described under this heading are those of a common bacteriuria. Bacillus coli. communis does not possess the ability of decomposing urea, therefore, the urine in coli-cystitis remains acid.

Since the mucous membrane of the pelvis, as already mentioned, reacts much easier to the intestinal toxins, coli-pyelitis frequently occurs without cystitis. This form of pyelitis is clinically very interesting. Although being benign, it is of a very persistent course and liable to relapses, which protracts the disease for many months. It is noteworthy that these forms of pyelitis characterized by cloudy urine due to the presence of pus and large quantities of bac. coli. comm., long as they may last,

even many months, remain superficial, benign, being not prone at all to extension to the kidneys or bladder. The general nutrition remains good; there is neither loss of appetite, paleness, nor wasting, fever being absent. The latter, however, may set in at any time, probably under the influence of the absorption of toxins (because of temporary impermeability of the ureters and the retention of the urine, or perhaps because of temporary increase of virulency of the bacillus). This fever is sometimes very protracted; it may last with variations a whole month, with wave-like elevations for several days up to 39 degrees C. (102.2 degrees F.) and even to 40 degrees C. (104 degrees F.) and then descending to 38 degrees C. (100.4 degrees F.) and lower.

Considerable elevations are also accompanied by chills, but in general, fever in such pyelites is of benign course and great durability.

Pain in the renal region is usually absent, but sometimes there is noticed frequent desire to urinate and increased amount of urine during twenty-four hours, especially in the beginning of the disease; but in the further course of the disease the amount of urine remains normal and the desire of urinating is not increased. Most characteristic are the properties of the urine. This is diffusely cloudy when voided from the bladder and does not become clear either on standing, or after filtration; its specific gravity is about 1011. The cloudiness depends upon the immense number of coli. bacillus; on standing a sediment is obtained consisting of pus corpuscles, but there is very little epithelium, and casts are entirely absent. Albumen is present, but in a very scant quantity. (The last two signs prove that we have to do with a pure pyelitis, but not with pyelo-nephritis.) The admixture of blood in the urine is met with in the presence of renal sand or small stones.

The course of these pyelites is characterized by marked durability and irregularity, the fever either disappearing, or reappearing indefinitely, and the condition so lasts weeks and even months; the urine being excreted either entirely clear (the period of seeming recovery), or again containing pus and bacteria.

Nevertheless as to the prognosis one should bear in mind that coli bacillus does not cause deep changes; that the morbid process does not affect either the kidneys, or the bladder: so

that the prognosis is favorable. According to Baginsky grave cases of pyelo-nephritis develop only when simultaneously with the coli. bacillus some other microbes also affect the kidneys, as, for instance, bacillus lactis, proteus, b. pyocyaneus, etc.*

Concerning the diagnosis most similar to coli-pyelitis is tubercular pyelitis. The readiest decision of the question is accomplished through the examination of the sediment, obtained by centrifugation, for tubercle bacilli.

The presence of *sand in the urine* has a different meaning, depending upon whether this becomes deposited from a long standing urine (for instance, during the whole night or twenty-four hours), or is voided as such and thus becomes immediately deposited. In the former case it denotes only that the urine is rich with uric acid, and the sand, in such cases, has no pathological meaning. Concentrated urine which gives, on long standing and cooling, a deposit in the form of fine, red dust is often observed in febrile patients or in violently perspiring children, for instance, in summer-time, or when too much meat has been used.

If the sand in the urine be voided ready formed then it undoubtedly has a pathological import, denoting that metabolism in the body is abnormal.

It occurs in adult persons during the so-called uric acid diathesis. Among the causes the chief place belongs to heredity; the history usually shows that one of the parents has suffered from podagra, or renal colics. As soon as the predisposition exists then as the exciting cause we may have the abundant use of meat, and the use of wine, even in small quantities, which circumstance is of great importance for the therapy of the condition. The sand being retained in the renal pelves and in the bladder may give rise to the formation of renal or cystic calculi. That urinary sand may be the cause of temporary albuminuria or even hæmaturia, was mentioned above (see page 474). In newly born children during their first days of life the appearance of urinary sand is only physiological. Its voiding is sometimes accompanied by loud crying, the cause of which becomes apparent by the child becoming quiet after urinating and when fine grains of red dust may be noticed on the diaper.

**Therap. Wochenschr.*, 1897, No. 20, page 500.

SEMEIOLOGY OF MICTURITION.

Hindered and painful micturition. We describe both these symptoms together, because they are closely connected with each other, in fact almost inseparable. If the micturition be painful (dysuria), then the patient will purposely retain the urine, and, vice versa, if the patient cannot void the urine (retentio urinæ, ischuria), then it is always accompanied by painful desire. Both are met with in children of any age and especially often in nurslings in whom dysuria manifests itself by the child becoming restless and crying before voiding water, and becoming quiet after that. Newly-born children do not urinate the first twenty-four to forty-eight hours at all; therefore, if they remain quiet it does not amount to anything. In the case of pathological retention of urine the child not only does not urinate and is restless, but dilatation of the bladder may be noted. In newly-born the most frequent cause of painful micturition (spasm of the sphincter) is urinary sand which is often in such cases seen on the diaper, or on the top of the præputium. This cause may continue acting two or three weeks, and sometimes much longer. Much more obstinate is another, not less frequent, cause of hindered micturition in small children, namely, the *physiological adhesion of the prepuce and the glans penis.* This condition is recognized by the fact that it is altogether impossible to draw the prepuce over the corona glandis; in most pronounced cases one fails to expose even the orifice of the urethra. In such cases the adhesion of the præputium may be the cause of hindered micturition because of the mechanical obstruction to the free elimination of the urine which must, so to say, forcibly overcome the narrowed place; however, in other cases the cohesion of the prepuce with the glans penis leads to the accumulation of smegma around the corona glandis, thus producing irritation and reflex spasm of the sphincter.

The same circumstance may take place also in children several months of age, and even still later, but with development

the adhesion disappears by itself. In girls much the same may be said regarding the adhesion of the minor labia. In other male children a like influence may be exerted by the too narrow and elongated prepuce which, although not being adherent to the glans penis, cannot, nevertheless, be separated, thus giving rise to accumulation of smegma.

Much rarer obstacles to the flow of urine are defects of development of the urethral mucosa, minutely described by English, in the form of various pocket-like folds on the lower wall of the membranous portion, as well as near the external orifice of the urethra, retention cysts* and other new growths, to which we shall not refer here as they cannot be diagnosed.

Complete retention of the urine in newly-born is met with in congenital closure of the lumen of the urethra, either in its distal portion or somewhere else in the urethral canal. In the former case the diagnosis is made by a mere inspection, in the latter by means of sound.

In males one to two years of age the cause of painful micturition is most often inflammation of the inner portion of the prepuce (posthitis) and of the glans penis (balanitis). On inspection it is easy to notice redness and swelling of the free margin of the prepuce, whose opening is usually covered by small crusts. A separation of the prepuce immediately shows several drops of pus. If physiological adhesion exists (just spoken of), pus may accumulate around the corona glandis, appearing externally only after separating the prepuce from the glans penis by means of the probe. The cause of balanitis is usually accumulation of smegma.

Not so often do we observe painful micturition due to *urethritis*, which sometimes develops in children because of infection with the gonococcus. Urethritis in children more commonly occurs through extension of inflammation from the prepuce, or from unknown causes, even in newly-born (sand? blenorrhœa?). The distinction from balanitis consists in that the pus appears not from under the prepuce alone, but also from the orifice of the urethra, especially upon pressing with the finger along the urethral canal from behind forwards.

Infantile blenorrhœic urethritis is characteristic by being

Jahrb J. Kinderh., VII., S. 58-88.

benign, as it does not become complicated by epididymitis, or bubo, neither lead to strictures, even if it becomes protracted for many weeks; on the contrary, specific blenorrhœic urethritis may, even in children, bring all these sequelæ.

In girls the cause of painful micturition is often *vulvitis* and *vulvo-vaginitis,* which appear either under the influence of general malnutrition (anæmia, scrofulosis) or exposure to cold (like rhinitis), uncleanliness, masturbation, and oxyuris vermicularis; but the most frequent cause of "whites" in children is their infection from each other or from adults by gonorrhœic pus which contains Neisser's gonococci. The differential diagnosis of gonococcus vulvo-vaginitis from a simple one is based especially on the bacterioscopic examination of the pus. If in a specimen stained with methylene-blue there occurs a great quantity of lymphoid elements which contain diplococci of characteristic shape (biscuit-like) and if these diplococci take Gram (a very important sign by which Neisser's diplococcus differs from all others similar to it), then one may make a positive diagnosis of the gonococcic origin of the vulvitis. Because of these characteristic signs it is superfluous to make microbe-cultures for diagnostical purposes. One may suspect gonorrhœic vulvitis in all cases where much pus of greenish color is eliminated and especially if the process also involves the urethra. If erosions arise on the inner surface of the labia majora because of inflammation, then micturition is so severely painful that the child endeavors to retain the urine as long as she can, and, when the act is finally performed, she jumps from the chamber, cries and throws about, resembling the symptoms produced by anal fissure during defecation.

In small as well as in older children (males) there are cases of very painful micturition because of the formation of a small *erosion* just *along the margin of the external opening of the urethra.* This condition described by Bokaj as urethritis orificii externi, is marked by great persistency. Bokaj observed it only in the Jews (thirty-three cases). Two of our cases were also Jewish children, two and five years respectively (the influence of circumcision?).

In some instances painful micturition depends upon very *concentrated urine.* When such a urine is cooled it gives a con-

siderable deposit of uric acid salts. In one nervous, anæmic eleven-year-old boy, in whom burning in the canal during micturition was the main complaint, and on account of which an operation for phimosis was performed without results, the urine was found normal, but very acid. Recovery set in a few months later.

In another case, also an eleven-year-old boy, with very good general nutrition and who was seemingly in good health, but nervous, severe pain in the urethra was observed at first during micturition (although not every time), and later on the pain began to appear in attacks sometimes during micturition and sometimes spontaneously, and not only in the urethra, but also in the perineum and in the abdomen. Pressure over the urethra, and especially the perineum, was always (that is, also in the intervals of pain) very painful. The examination of the urine did not reveal anything abnormal, but it was very concentrated and acid; Vichy water and deprivation of meat did not cause improvement. Professor Kojevinkoff diagnosed neuralgia of the pudendal nerves and adminstered electrical treatment with excellent success.

Very frequent and painful micturition always accompanies acute *cystitis;* being less pronounced in the chronic form. Different stages of cystitis are known under the name of *catarrhal* and *purulent cystitis.* The form of cystitis depends upon the nature of the bacteria. Cystitis is caused by bacteria which decompose urea, but which do not possess pyogenic properties, so that cystitis may exist very long without becoming purulent. The voided urine is either of strong alkaline or of neutral reaction, but always with ammoniacal odor (cystitis catarrhalis ammoniacalis) and gives more or less abundant sediment. The latter is in its gross aspect very similar to pus, but it does not contain pus corpuscles but rather mucus (dissolving in potassic hydrate), in which the microscope detects crystals of ammonio-magnesium phosphate (coffin-lids), uric acid ammonium, epithelium of the bladder and a great quantity of bacteria. Albumen may be entirely absent from the urine during cystitis. From bacteriuria it differs by painful and frequent micturition, and from ammoniacal cystitis by the sediment, which contains, in the latter disease, many pus corpuscles and, under the influence of caustic potassium,

it assumes a jelly-like consistency. If in ammoniacal cystitis coli bacillus be found, then never alone (as it cannot cause alkaline fermentation of the urine), but together with some other microbes which possess pyogenic properties and decompose urea, more often staphylococcus.

Cystitis with acid urine (cystitis acida) differs from the preceding form by the urine remaining acid despite the prolonged existence of the disease. Such cystites are most often caused by the tubercle bacillus, and next by the coli bacillus (Figs. 54 and

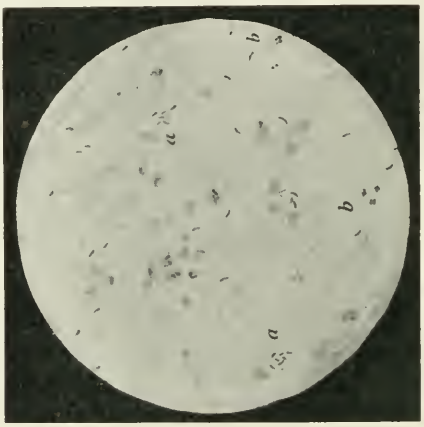

Fig. 54—Tubercle-bacilli (Lenhartz).

55); not so often the disease is caused by Neisser's gonococcus, typhoid bacillus and diplococcus aureus. Painful micturition (dysuria), tenesmus of the bladder and the amount of pus in the urine are least evident in coli-cystitis, and most pronounced in the presence of tubercular ulcers on the mucosa of the bladder (at the neck); in such a case a few drops of pure blood not rarely appear at the end of micturition.

The severest dysuria in chronic form is produced by a *vesical calculus*. It is especially characteristic of this condition that the stream of the urine often stops suddenly. An examination with a catheter is necessary for an exact diagnosis.

Retention of the urine apparently due to spasm of the sphincter, and accompanied by violent rectal tenesmi, often occurs in

two or three-year-old children during dysentery or in anal fissures, and, according to some, also in oxyuris.

In older children a transitory vesical spasm may appear under the influence of exposure to cold (a cold water-closet), or may be due to the use of beer and some drugs, especially turpentine.

Spasm of the bladder may be produced by inflammation of neighboring organs, for instance, spondylitis. In peritonitis a mere retention of the urine often takes place due to inactivity of the abdominal musculature; this retention is occasionally so considerable that catheterization may be needed.

Complete retention of urine during twenty-four hours and

Fig. 55—Tubercle-bacilli in the urine (Lenhartz).

longer depends either on the fact that the urine is not excreted by the kidneys (anuria), or on that the bladder cannot eliminate it (retentio urinæ). In the former case the bladder is empty, therefore percussion of the lower portion of the abdomen over the symphysis pubis gives a tympanitic note, and only a very small amount of urine may be withdrawn. Such a condition is met with in severe acute nephrites and infantile cholera.

In the second event of the complete retention of the urine the bladder is distended, being easily palpated in the lower portion of the abdomen as a spherical, fluctuating tumor which reaches the navel. To mistake such a tumor for ascites is possible, but

only where a very superficial examination is made. For a correct diagnosis it is sufficient to give attention to the place of accumulation of the fluid and to its regular boundaries, which correspond to a distended bladder. It is pathognomonic of such a tumor that it disappears after catheterization. It is much easier not to notice the distended bladder than not to recognize its nature. This happens when the physician attaches too much importance to the history, losing sight of the fact that mothers pay more attention to the bowel dejecta than to the micturition of their children, so that they answer by guess, while the child does not complain of anything because of the tender age, or because of blunted consciousness. The latter condition often exists in typhoid and meningitis.

Complete retention of the urine, notwithstanding a strong desire and tenesmus, most often occurs during the passage of *urethral calculi* which are usually retained in the navicular fossa or in the prostatic portion of the urethra. A calculus impacted in the urethra is easily palpated beneath the skin upon careful examination of the penis.

Complete obstruction of the urethra from the strangulation due to paraphimosis seldom occurs. This condition is easily recognized by the characteristic change of the external aspect of the penis, the glans penis is denuded, exhibiting great œdematous swelling.

A circumstance identical to this, but without a denudation of the glans is sometimes obtained from strangulation of the penis with a thread, which the patient cannot remove, as it is deeply imbedded in the skin, and for sometime this is not mentioned by the patient from the fear of punishment for his trick.

Retention of urine may be the consequence of paralysis of the detrusor in caries of the vertebral column and inflammation of the spinal cord (myelitis).

In one case of a six-year-old boy we observed a remarkable atony of the bladder with lowering of its sensibility, becoming evident by the fact that the boy would pass the urine not more than once in twenty-four hours. When he was brought to the clinic he did not feel any desire to urinate, notwithstanding the bladder was distended up to the navel. It was impossible to de-

tect any cause of the atony of the bladder inasmuch as in all other respects the child was healthy, and it was only mentioned in the history that he "since childhood" seldom passed water. Evidently we had a case of either inherited atony, or the latter arose because of a bad habit of prolonged retention.

Paralysis of the detrusor oftener sets in because of an affection of the spinal cord (myelitis transversa)—ischuria paralytica; if the sphincter also be paralyzed, then, despite the considerable distension of the bladder, the urine is voided by drops —ischuria paradoxa.

Incontinence of the urine. Of most frequent occurrence in children is the *night incontinence*—enuresis nocturna. This is a peculiar neurosis of the bladder, quite exclusively characteristic of childhood and disappearing spontaneously toward the age of twelve to fourteen years. It appears in children of flourishing health as well as in anæmic and nervous ones, but in the latter oftener. The disease consists in that the child voids the urine during sleep almost every night, while in the day-time he has regular control over his bladder.

The foundation of the disease apparently lies in an exaggerated excitability of the detrusor. In severe cases it goes so far that the patient even during the day-time cannot resist the inclination and unwillingly voids the urine immediately—enuresis diurna.

Anæsthesia of the mucosa of the bladder in such cases cannot be upheld, but rather hyperæsthesia.

Among the causes, predisposing and productive, there are: phimosis, a too acid urine, excessive use of liquids before going to bed and intestinal worms. The age and the sex are also of undoubted influence, since nocturnal incontinence most often occurs in males of from five to twelve years of age. Furthermore favorable is a *very profound sleep*, which is observed in almost all children suffering with nocturnal incontinence of the urine. We do not hold profound sleep as a cause of the disease, but merely as one of the most important conditions for the manifestation of the same. Some authors point to the very frequent coincidence of nocturnal incontinence with the presence of adenoid vegeta-

tions in the naso-pharyngeal cavity* and with mouth breathing during the sleep.

In some cases incontinence of urine, in the form of too frequent micturition, depends upon a pronounced disease of the bladder (catarrh) or upon enormous secretion of the urine, as in diabetes insipidus and mellitus. Then again it is also observed in children who use too much liquid, or it may depend on paralysis of the sphincter, in which cases the urine is constantly voided by drops, as, for instance, in some cases of myelitis, as well as after a not entirely successful lithotomy.

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*[About the connection between the adenoids in the nose and incontinence of the urine see note on p. 256.—EARLE.]

TUMORS OF THE SCROTUM AND THE INGUINAL CANAL.

An enlarged scrotum may depend upon thickening of its walls or upon increase of its contents.

The skin of the scrotum is normally thin and tender, it may be easily folded and, in general, appears corrugated. It becomes thickened because of œdema or inflammation. In both cases it assumes a smooth surface, so that the thickened skin cannot be folded. In œdema, which usually also spreads to the skin of the penis, it is pale; upon pressure with the finger there remains a slowly-disappearing depression, painfulness being absent. During inflammation the skin is red, hot and painful, and no dimpling remains after pressure. The causes of œdema here are the same as of subcutaneous dropsy in general, while inflammation is most often due to erysipelas, and sometimes also to local diseases, as urethral calculi, contusions, etc.

If the skin of the enlarged scrotum be normal, then it means that the increase in size took place on account of the contents, that is, there may be inguinal or scrotal hernia, hydrocele, or enlargement of the testicle itself.

Hernia is characterized by being easily reducible when the patient is lying on his back (adherent herniæ never occurs in early childhood), while it is quite characteristic that the tumor suddenly slips into the abdominal cavity, being frequently accompanied by a gurgling sound. If the hernial part of the bowel contains air, then percussion of the tumor gives a tympanitic note.

Dropsy of the testicle—*hydrocele tunicæ vaginalis*—results in an oval tumor with a smooth surface, fluctuating and irreducible into the abdomen; near the external orifice of the inguinal canal one can palpate the upper boundary of the tumor and thus convince himself that it does not extend over the abdomen and that it is therefore not a hernia.

The same peculiarities are also observed in DROPSY OF THE SHEATH OF THE SPERMATIC CORD—*hydrocele funiculi spermatici*—with the difference that in the former case the testicle is surrounded by fluid, and if it can be felt, then only on one side, while in the latter case it lies near the lower end of an oval or cylindrical tumor.

A marked likeness to hernia is exhibited by dropsy of the testicle or spermatic cord, when the cavity of the vaginal membrane (tunica vaginalis) communicates with the peritoneal cavity; in such a case the tumor may also be reduced (although not at once and without gurgling), but the essential difference is that the dropsical tumor is transparent, which never occurs in hernia.

For detecting this symptom it is best to use a rather dark room. The patient lying on his back with extended legs, the physician with one hand lifts the scrotum so that the tumor is higher than the thighs and, sustaining the same from below, he stretches the skin. The ulnar margin of the other hand he places against the tumor and looks through the tumor toward a candle placed at some distance to the opposite side. If the examination be performed in a light room, then a window takes the place of the candle.

In case hydrocele is complicated by hernia the reducible part of the tumor which gives a tympanitic note will be above, while the irreducible and transparent portion remains below.

If there be no accumulation of fluid, the tumor depending upon enlargement of the testicle itself, then it is of more solid consistency and does not fluctuate. If the swelling of the testicle has developed acutely, with fever and pain (especially upon pressure), then we have to deal with inflammation of the testicle and epididymis (orchitis and epididymitis) which diseases are very rarely observed in children, especially little ones. After twelve years they sometimes occur as a complication of mumps.

Much oftener chronic tumors of the testicle occur differing from the preceding by slow development, slight painfulness and irregular surface. In such cases the diagnosis must be between *tuberculosis and syphilis of the testicle.*

In both cases the tumor may be soft in some areas, become adherent to the skin and open externally, leaving an ulcer.

The question regarding the nature of the tumor may be decided, partly by the history and the concomitant symptoms, partly, however, on the ground of the localization. Tuberculosis usually starts from the epididymis and spreads to the spermatic cord by the formation of new nodules; syphilis, however, attacks the testicle itself.

If a roundish, smooth, elastic-solid tumor of the size of a hazel-nut or a walnut be felt in the inguinal canal, and which may be easily reduced, yet upon the strong action of the abdominal wall again reappears, then we may have either a beginning hernia, or an impacted testicle in the inguinal canal (monorchismus), or, if it be irreducible, then a circumscribed dropsy of the spermatic cord. If the corresponding side of the scrotum be empty, that is, no testicle be felt, and at the same time the tumor is somewhat painful on pressure, then such a tumor is nothing but a testicle *that has not descended;* if, however, the fellow testicle be in its proper place, the tumor irreducible and its boundaries distinctly palpable, then it is *hydrocele funiculi spermatici;* and if the enlargement disappears of itself upon lying on the back or upon pressure over it with the fingers, then it is either a *hernia,* or an *open* (that is, communicating with the abdominal cavity) *dropsy of the spermatic cord*—hydrocele funiculi spermatici communicans. The small size of the tumor does not allow of its examination as to transparency and the diagnosis therefore becomes established on the consideration of other properties. The reduction of a hernia is accompanied by a rumbling sound, and the tumor quickly reappears upon pressure impulses on the part of the abdominal walls; while dropsy of the spermatic cord upon being removed by pressure, reappears later on and gradually.

A testicle impacted in the inguinal canal may be inflamed and, becoming enlarged, be strangulated, causing the patient the severest pain, and sometimes even vomiting, resembling a strangulated intestinal hernia. A distinction here is that in the latter case there necessarily develops meteorism and absolute constipation (that is, even gases are not eliminated), and the vomiting in the case of an inflamed testicle is not so persistent and the tumor is more circumscribed, spheric-like or oval in form.

THE SEMEIOLOGY OF THE SKIN AND SUBCUTANEOUS CELLULAR TISSUE.

THE GENERAL TINT OF THE SKIN.

Diseases Characterized by Pallor of the Skin.

A considerable *pallor of the skin* and mucous membranes, as a symptom of anæmia, unless it depends on accidental loss of blood, denotes malnutrition; this may depend either upon fever, or on diseases of some organs (*symptomatic anæmia*), or on impaired formation of blood (*essential*, or primary *anæmia*).

In judging of pallor of the skin, attention should be especially paid to the ear-shells, but not to the cheeks, as the latter may be pale in healthy children, and, vice versa, easily blush in anæmic children. Of mucous membranes the conjunctivæ and the lips are of first importance. The presence of more or less subcutaneous fatty tissue is of no value for the estimation of anæmia.

Besides the pallor of the skin and mucous membranes, anæmia manifests itself by many other symptoms due to lack of oxygen in the blood (because of diminution of the number of the red blood corpuscles and the quantity of hæmoglobin) leading to malnutrition of the tissues and organs. To the characteristic and constant symptoms of any pronounced anæmia belong:

(1) Rapid onset of dyspnœa following any physical exertion.

(2) Muscular weakness and quick fatigue.

(3) Irritability of the nervous system manifested by headache, uneven spirits, tendency to cry, etc.

(4) On the part of the vascular system attention should be given to anæmic murmurs at the base of the heart, and especially venous murmurs just below the sternal end of the clavicles. (The character of these murmurs and their difference from organic cardiac murmurs may be found on page 62.)

(5) On the part of the organs of digestion the usual con-

comitants of anæmia are loss of appetite and inclination to constipation.

Of symptomatic anæmiæ, of diagnostic interest, are pallor accompanying acute nephritis which sometimes constitutes in the beginning the sole manifestation of this disease leading the physician's attention to the patient's urine.

Pallor of the integument which necessarily accompanies chronic suppuration anywhere in the body (especially in the bones) may be the most prominent symptom of pleuritic exudation, when the latter occurs without cough and violent dyspnœa, so that it may be overlooked unless a physical examination of the chest is carefully effected.

Pallor of the skin in nurslings most often accompanies rachitis and thus may be of great importance in the diagnosis of the initial stages of the disease, because it appears early (see rachitis). Pallor sometimes appears equally early during tubercular affections and, among others, in tubercular meningitis long before the development of meningeal symptoms.

If the child appears anæmic while no definite cause of his anæmia can be detected, then it remains to suppose *essential anæmia—anæmia essentialis*—which depends upon impaired activity of the blood-making organs. The diagnosis of such an anæmia may be established by way of exclusion, while one must prove that all internal organs are healthy, and that the patient has neither tuberculosis, chronic suppuration, albuminuria, etc.

Depending upon the course, concomitant symptoms, peculiarities of blood-changes and terminations, different forms of anæmia are distinguished, namely:

(1) Simple anæmia—anæmia simplex.

(2) Infantile splenic anæmia—anæmia splenica infantum.

(3) Infantile pseudo-leukæmia—anæmia pseudo-leukæmica infantum.

(4) Actual leukæmia—leukæmia.

(5) Malignant progressive anæmia—anæmia perniciosa progressiva.

(6) Chlorosis.

Although sharp boundaries cannot be defined between all these forms, as they pass into each other imperceptibly, never-

theless they should be differentiated from a clinical point of view, as there is connected with this or that form an idea of the course and issue of any given case.

Blood changes in anæmia are of a very important clinical value not only for the diagnosis of different forms of anæmia, but also for the prognosis and estimation of the results of therapeutic endeavor, so that this subject should be discussed somewhat in full.

In clinical examination of the blood especial attention must be given to the number, size and form of the red and white blood corpuscles, as well as to the quantity of the hæmoglobin in the blood.

Normally the amount of red blood corpuscles (erythrocytes) in infantile blood is nearly the same as in adults; only in the newly-born during the first day of life this considerably exceeds the normal standard, reaching six and a half up to seven millions per one cubic millimeter instead of the normal five to five and a half millions.

All erythrocytes are of equal size and have the shape of double-concave disks, which do not contain a nucleus and are equally stained with hæmoglobin in red color.

In cases of anæmia, red blood corpuscles exhibit various deviations, of which the most constant is the *diminution of their number;* in general, one may say that the severer the anæmia, the less the number of erythrocytes; in mild cases of anæmia there are three and a half to four and a half millions; in grave ones one and a half to three and a half millions, and in the severest there is about five hundred to seven hundred thousand per one cubic millimeter.

The second deviation concerns the *size* of the erythrocytes, which is peculiar only of severe degrees of anæmia independent of its special forms. Here belong cases in which very small blood corpuscles (shrimp-erythrocytes) appear in the blood, or small spheric corpuscles which are densely stained with hæmoglobin (microcytes) and very large blood corpuscles (*macro-* and *giant cytes*).

In grave cases of anæmia, however, there is observed a third deviation on the part of the red corpuscles, namely, the appearance of *nucleated erythrocytes* (blasts or erythro-karyo-

cytes); they are of different size, so that there must be distinguished normoblasts (the size of a common erythrocyte) and megaloblasts (corresponding to giant cytes). Erythrokaryocytes occur especially easily in small children, so that in the first months of life they appear even in the moderate degrees of anæmia, while in adults they always denote a dangerous anæmia.

The fourth deviation is exhibited by the so-called *poikilocytes*, that is, erythrocytes which assume irregular outlines and appear as biscuit-shaped, pear-shaped, horse-shoe-shaped and in

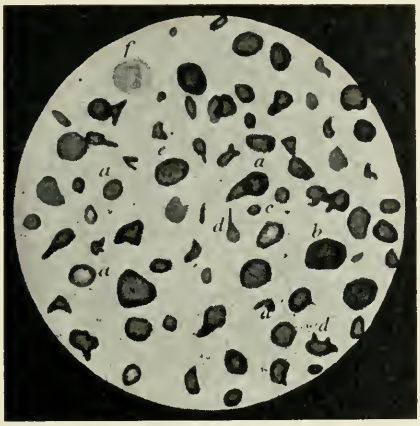

Fig. 56—Progr. Pernic. Anæmia: (a) Normal erythrocytes; (b) numerous meagelocytes; (d) poikilocytosis; (e) megaloblast; (f) polynuclear neurophol. leukocytes (Lenhartz).

other similar forms. They also occur only in considerable degrees of anæmia, but not exclusively in any one definite form. (Fig. 56.)

White blood corpuscles are considerably more in number than the red ones; their amount varies from five to ten thousand per cubic millimeter, but in the newly-born it reaches, during the first days of life, about twenty thousand (physiological leucocytosis).

According to the size, granularity and properties of the nucleus, white blood corpuscles vary very much, so that, for instance, Ouskoff, names fourteen kinds of them, but for clinical purposes four varieties are sufficient.

(1) *Lymphocytes*—about the size of an erythrocyte, con-

taining one nucleus stained of blue color, when the double stain with eosin and methylene blue (see below) is employed; the protoplasm also becomes blue, but not so intensely. Normally their number is about twenty to twenty-five per cent. of the whole amount of leucocytes.

(2) *Multinuclear leucocytes* or neutrophiles. They are considerably larger than the preceding; the nuclei become stained of blue color, but the protoplasm pinkish. They constitute seventy to eighty per cent. of the whole amount of leucocytes.

(3) *Transitory forms* have the size of a neutrophile cell, but with one laciniated nucleus which is stained a faintly blue color.

(4) *Eosinophilous leucocytes* with large granularity of the protoplasm; these granules are stained with eosin of a bright-red color, while the nucleus takes blue. In the normal blood they are very few, one to three per cent.

It is thought that lymphocytes arise in the lymphatic glands, multinuclear in the spleen, and eosinophilous in the bone-marrow.

In pathological cases deviations on the part of leucocytes affect their number. In some cases of anæmia, not excluding even the gravest forms, the number of leucocytes remains normal, in other cases it increases considerably; sometimes this increase is referred almost equally to all forms of leucocytes, sometimes, however, only to one form.

Different methods of blood-staining have been proposed for the purpose of the better understanding of all possible deviations in the morphology of the blood. One of the most practical methods in regard to the rapidity of examination and obtaining results is that of Gabrichevsky—the double staining of the blood with eosin and methylene blue.

According to this author the staining is performed in the following manner: A drop of blood is spread in a thin layer between two cover glasses; after that the upper cover glass is removed (but not lifted off) from the lower one. The specimens having been dried by the air are immersed for fixation in a mixture consisting of equal parts of pure alcohol and ether. The specimens remain in this mixture twenty to thirty minutes, after that they may be stained. The specimens are first stained three or four minutes by a one per cent. solution of eosin in

sixty per cent. alcohol. The eosin solution and a saturated watery solution of methylene blue are half diluted, before being used, with distilled water. Then the specimens are washed in distilled water, transferred for fifteen to thirty seconds to a solution of methylene blue, are washed in water again, dried and placed in Canada balsam.

With the aid of such a staining of the blood specimens it is quite possible to distinguish the chief varieties of leucocytes, nucleated erythrocytes, blood-plaques and malarial parasites (these are stained a blue color).*

Proceeding to the description of separate forms of anæmia, we will be limited to the chief differential signs:

Simple anæmia—anæmia simplex—belongs to chronic, stationary disorders of nutrition. It occurs in the mild and grave forms, of which the former is more peculiar to older children, and the latter to small ones, especially under two years.

Mild forms of simple *anæmia* are characterized by *moderate* pallor of the skin and mucous membranes; the spleen, liver and lymphatic glands being normal. The changes of blood consist in some decrease of the amount of red corpuscles (from four and a half millions and not less than three and a half millions) without *alteration in their size and form*, and in the diminution of the hæmoglobin contained in blood.

(Normally the largest per cent. of hæmoglobin is in the blood of newly-born children—one hundred per cent. according to Fleischl—toward five years its amount decreases to sixty per cent. and then rises again, reaching toward twelve years seventy to eighty per cent; in mild anæmia there is about forty-five to fifty-five per cent. hæmoglobin found.)

The outlook is good in the case of mild anæmia because in time this disappears independently.

The causes of anæmia are to be looked for, in the great majority of cases, in the conditions of growth during the first years of life; therefore, it is easy to discover, in the history, either some information regarding an old rachitis, or some other severe diseases, or that the child was an abortive one, or bottle-fed. If the child was previously entirely well, began to grow

*Gabrichevsky: *A Sketch of Normal and Pathological Morphology of Blood.* Moscow, 1891. p. 7.

thin and pale only recently, blue circles became apparent about the eyes, and he became simultaneously inattentive, then masturbation must be thought of. The absence of fresh air (constantly remaining in-doors), worms (ova in the dejections); too rapid growth; forced mental exercises and incipient tuberculosis are also occasional causes of anæmia.

About the differential diagnosis of essential anæmia from the symptomatic variety due to stomach catarrh, which it most resembles, see page 112 (Semeiology of the Appetite).

The grave degree of simple anæmia most often begins in the first or second year of life, but it may also become protracted for many years and in such cases pronounced pallor is observed up to about the seventh year. Like all severe degrees of anæmia it is characterized by *waxy pallor of the skin of the face* and alteration not only of the number, but also of the *shape*, of red blood corpuscles. The number of red blood corpuscles (erythrocytes) falls, for instance, to three and a half or two and a half millions per cubic millimeter. But what is especially characteristic of any severe degree of anæmia, is the change of the size and shape of the red blood corpuscles; therefore, here, together with normal red blood corpuscles, micro-, macro- and poikilocytes are also found, and in sucklings, nucleated red blood corpuscles as well, but the latter only in small amount (according to Luzet this is an essential sign for the differentiation of the simple severe form of anæmia from the infantile pseudo-leukæmic anæmia of Jaksch).

In comparatively milder cases, one may find a moderate poikilocytosis without micro- and macrocytes. The amount of hæmoglobin falls to forty-five or to thirty per cent. Colorless blood corpuscles either remain in normal quantity, or their number somewhat increases, for instance, twice the normal, that is, up to fourteen or twenty thousand, so that the ratio between white and red corpuscles will be as 1 :125 to 1 :200.

If the above described grave form of anæmia be accompanied by *tumor of the spleen*, which is palpated two to three fingers' breadth below the false ribs, then such cases are called INFANTILE SPLENIC ANÆMIA—*anæmia splenica infantum*. (One must not confound it with anæmia splenica of adults which is the synonym of pseudo-leukæmia).

Anæmia simplex gravis, like infantile splenic anæmia, most often occurs in rachitis and inherited syphilis, as well as in abortive children.

Having reached a certain degree, anæmia remains stationary during many months and even years, but finally ends with recovery.

In the prognosis one must bear in mind that such children poorly withstand acute diseases, and therefore any febrile affection may be dangerous to them.

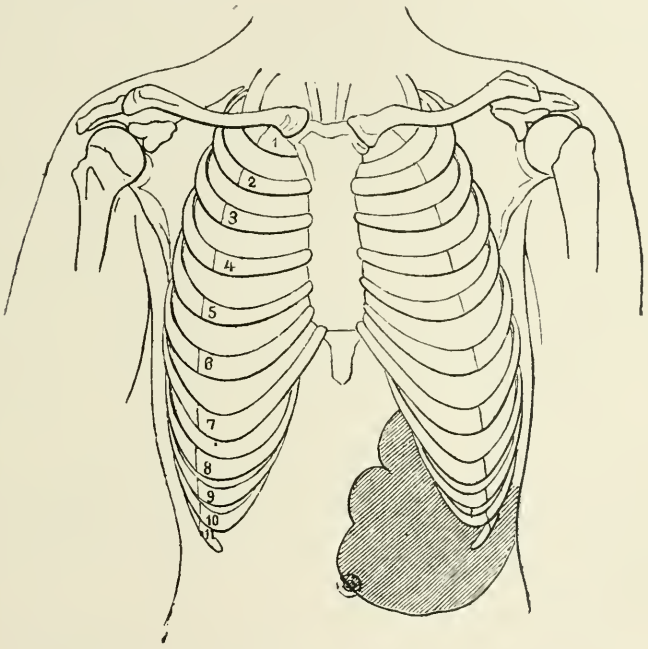

Fig. 57—Leukæmic tumor of the spleen (Sahli).

Severe forms of splenic anæmia may be imperceptibly transformed into the PSEUDO-LEUKÆMIC ANÆMIA OF JAKSCH. This disease is also peculiar to small children only; after two years of age it seldom occurs and almost never after four. In typical cases the diagnosis may be made even without an examination of the blood. A child with waxy-pale tint of the face and bloodless gums, without any rachitic symptoms (or manifests only slight symptoms of rachitis on the bones of the skull and ribs), ex-

hibits a *large and solid* spleen; the latter may reach the navel forwards, and the iliac spine downwards. (Fig. 57.)

In the differentiation from leukæmia it is important to point out that the lymphatic glands in infantile pseudo-leukæmia do not undergo hyperplasia, and that the liver, although it may be palpated in half of all cases about two or three fingers below the ribs, does not increase so much, that is, not proportionally to the spleen, as happens in amyloid degeneration and actual leukæmia. It is obvious that in the beginning of its development, when the spleen is not yet very large, infantile pseudo-leukæmia is identical in its symptoms to splenic anæmia; the difference between them is that Jaksch's anæmia is of progressive character, while splenic anæmia is more stationary. As to the blood, the red corpuscles exhibit all changes which are, in general, peculiar to severe anæmias (*vide infra*), but the most essential symptom, according to Jaksch, is the *extreme decrease of the amount of red blood corpuscles, the white being more or less increased in number.* In one case Jaksch found 820,000 red and 54,666 white corpuscles (the ratio is 15:1), but this is an extreme instance; usually the number of erythrocytes varies from one and a half to two millions, and leucocytes about twenty to forty thousand (the ratio being 100 to 50:1).

Of the leucocytes we find large, multinuclear cells (neutrophile cells), but there are but few eosinophile cells.

The further peculiarity of the blood in infantile pseudo-leukæmia consists in the great amount of red nucleated cells (norma- and megaloblasts), of which many exhibit appearances of karyokinesis.

Infantile pseudo-leukæmic anæmia is distinguished by a very slow course and comparatively seldom ends with recovery. The productive causes of this morbid form are unknown. Of its differentiation from the genuine form see below.

Leukæmia. Like the preceding variety this is characterized by a chronic course, intense pallor of the skin and mucous membranes and extensive enlargement of the spleen, but in addition to this the lymphatic glands and the liver become *considerably swollen.*

Changes of the blood here consist, as in the infantile

pseudo-leukæmia, in decrease of the number of red blood corpuscles and the simultaneous increase in the number of leucocytes with this difference, however, that in pseudo-leukæmia the diminution of the red blood corpuscles reaches a greater degree than in leukæmia, while the number of leucocytes does not increase so considerably, that is, *infantile pseudo-leukæmia is especially* characterized by diminution of the red blood corpuscles, while leukæmia—by increase of the number of leucocytes.

In an actual leukæmia the number of erythrocytes almost never falls below one and a half million, usually keeping at about two to two and a half million, while the number of leucocytes at the same time reaches from sixty thousand to three hundred thousand (1:5 to 20). Further it is characteristic of leukæmia that together with large multinuclear leucocytes there is a considerable increase of *eosinophile and transitory* cells (large ones with a big nucleus). Nucleated red blood corpuscles, micro- and poikilocytosis also occur in leukæmia, but not to such a marked degree.

Among other constant symptoms of leukæmia we find an abnormally large excretion of uric acid in the urine and a tendency to bleeding from the mucous membranes (especially nasal) and beneath the skin.

The usual termination of leukæmia is death.

In the paleness and swelling of the lymphatic glands and spleen a great similarity to leukæmia is exhibited by *adenia,* or *false leukæmia* (Hodgkin's disease), but in this disease, notwithstanding the anæmia being much developed (diminution of the number of red corpuscles), there is no increase of the quantity of leucocytes in the blood.

[Reed* believes that Hodgkin's disease may be regarded as a clinical and pathological entity of unknown ætiology; the main features of which are painless, progressive, glandular enlargement, usually starting in the cervical region, and without the blood changes of leukæmia. According to Simmons, Hodgkin's disease has no relation to leukæmia or tuberculosis, although the latter may be coexistent. Joseph Sailor, however, thinks, that most, if not all, of the cases of pseudo-leukæmia are tuber-

**Deut. Med. Woch.,* Feb. 12, 1903.

culous in nature. In reviewing recent literature and views on Hodgkin's disease in *The American Year Book of Medicine,* 1904, Riesman and Kelly say: "The contention regarding the use of the term Hodgkin's disease is doubtless attributable to the different points of view from which it is approached. In view of the obscure ætiology of most of the cases, little can be postulated with certainty. It seems that many cases clinically Hodgkin's disease are tuberculous in nature, others may be syphilitic, some are probably a pre-leukæmic or a leukæmic stage of true lymphocytic leukæmia; some are instances of true tumor-formation; while others may be what Reed and Simmons are disposed to look upon as true Hodgkin's disease. The entire subject of lymph-gland diseases is much in need of further elucidation."—EARLE.]

MALIGNANT ANÆMIA—*anæmia perniciosia*—belongs to older children, although even in them it occurs as a great curiosity. [Lately Senator (Berlin) has reported a case of pernicious anæmia in a *ten-months-old* child. There was rachitis and anæmia, but no swelling of the lymph-glands, spleen or liver. The blood examination showed microcytes, macrocytes, poikilocytes, great diminution of red cells and of hæmoglobin. The white corpuscles were not notably increased in number, but the lymphocytes constituted 73.5 per cent. of the total.*—EARLE.] Among the constant symptoms of malignant anæmia are included besides the extreme pallor, also a tendency to bleeding under the skin (especially that of the legs) and the fundus of the eye (scotoma), diarrhœa (sometimes from the very beginning of the disease, but oftener in the period of its highest development) as well as fever.

Fever due to anæmia (anæmic fever) deserves especial attention, because, having once appeared in the patient, it may considerably hinder the diagnosis, leading the physician to look for the cause of fever somewhere else (most often malaria is suspected) and making him think that anæmia is due to fever. Anæmic fever is observed only in considerable degrees of anæmia, and not only in pernicious anæmia, but also in false and actual leukæmia and Jaksch's pseudo-leukæmic anæmia. The temper-

*Quoted from *American Year Book of Medicine,* p. 344.

ature curve varies in different cases very much, both in regard to the height of the temperature, as well as to the whole course thereof. In some cases the temperature is low, for instance, it does not rise higher than 38.5 degrees C. (101.3 degrees F.), in others it rises higher than 39 degrees C. (102.2 degrees F.) and sometimes even higher than 40 degrees C. (104 degrees F.). In its type the fever may be referred either to the class of febris continua remittens, or it rather assumes the type of intermittent fever, being most often entirely irregular. It may also happen that fever runs with intervals, that is, it is quite high for several days, then it falls to the normal for a few days, then

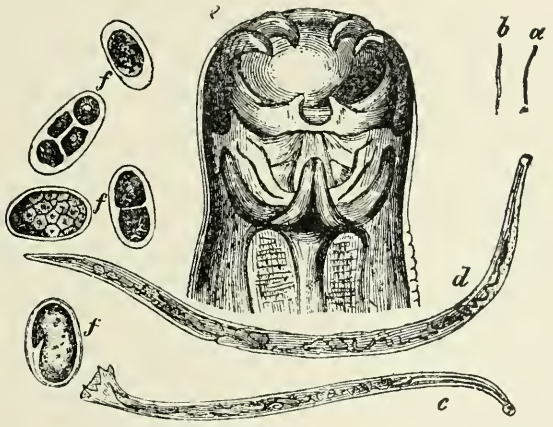

Fig. 58—Anchylostomum duodenale (after Jaksch): a—male (natural size); b—female (natural size); c—male slightly magnified; d—female magnif; e—the head; f—eggs.

rises again, etc., thus continuing many weeks. Such cases are described under the name of chronic relapsing fever.

The chief alterations of blood consist in the very excessive diminution of the number of the red blood corpuscles (in ordinary cases to 600,000 or 750,000) and of hæmoglobin (contrary to chlorosis the diminution of hæmoglobin is not so pronounced as the diminution of the number of red blood corpuscles); the number of leucocytes decreases also, so that their ratio to the red ones remains normal. The microscopical examination of the blood does not reveal anything which would not be met with also in other forms of pronounced anæmia; the only peculiarity

is that in no other form of anæmia is the poikilocytosis pronounced. Many micro- and especially macrocytes are also seen.

The duration of malignant anæmia varies from a few weeks up to several months.

The causes of the disease usually remain unknown, yet some cases have undoubtedly been dependent upon intestinal worms, especially on anchylostoma duodenale (the disease of the workmen in the Saint Gothard tunnel; in other places of Europe this worm has been found in the workmen employed in brick-yards), bothriocephhalus latus (similar cases are also described in pediatric practice, for instance, the case of Mme. Podvissotzky). (Fig. 58.) Demme described a case of malignant anæmia due to ascarides; a three-year-old child had 2,450,000 red corpuscles, forty per cent. hæmoglobin, poikilocytosis; fourteen days after the expulsion of twenty ascarides the number of red corpuscles was 4,200,000; hæmoglobin seventy per cent.

Malignant anæmia belongs to the absolutely fatal diseases, but cases depending upon intestinal worms constitute an exception in this regard. It is therefore necessary in all cases of indefinite anæmia to examine the fæces for eggs of the worms. Ova of the anchylostomum are characterized by appearing in various periods of division of the yelk.

Chlorosis. Noteworthy among other peculiarities of this affection is its almost exclusive development in girls at the period of puberty, so that the pediatrist has little to do with this disease. The further peculiarities of this form of anæmia consist in its benign course, tendency to relapses and its yielding to iron therapy. It is also remarkable that in the ætiology of chlorosis the essential rôle is sometimes played by various nervous influences; home-sickness in the female pupils of institutions; also fright and grief. The blood changes are especially characterized by the considerable diminution of hæmoglobin, the number of the red blood corpuscles being almost normal.

DISEASES CHARACTERIZED BY A YELLOW TINT OF THE SKIN.

Yellow color of the skin and conjunctivæ is a positive sign of jaundice, that is, of the presence of bile-pigment in the blood and tissues.

Jaundice of itself is not a disease, but merely a symptom, for the origin of which one must examine and reason further, this being the task of diagnosis.

In the *newly-born* jaundice occurs so often that it has obtained the name of *physiological jaundice*. This name is perfectly justified, as icterus (jaundice) of the new-born depends on physiological destruction of red blood corpuscles during the first days of life, as well as upon physiological changes in the liver, which are:—increased secretion of bile due to hæmoglobinæmia (Silbermann) and some retention of the bile caused by desquamation of epithelium of the bile ducts (Cruse), and by the œdematous condition of the interlobular connective tissue of the liver (Birch-Hirschfeld).

The diagnosis of physiological jaundice of the new-born is based on the child's age (the beginning of the icterus on the second or third day), on his excellent general condition (the child is quiet, takes the breast good), a yellow, normal color of the fæces (this excludes icterus due to congenital obstruction of the bile duct) and on the benign course as well (this icterus always ends with recovery within a few days).

In new-born another kind of an icterus also sometimes occurs, ending with death and therefore known under the name of *grave jaundice* of the new-born—icterus gravis neonatorum s. septica. It is a manifestation of pyæmia and accordingly occurs with high fever, collapse and almost always with periarteritis or periphlebitis of the umbilical vessels.

The third variety of icterus of new-born, which also does not yield to treatment and terminates in death within a few weeks or months after birth, differs from other kinds of jaundice by an exceedingly pronounced discoloration of the integument, the dejections being *colorless*. Such a jaundice depends upon an inherited occlusion of the bile-duct.

Finally, also exclusively in new-born, icterus occurs as a symptom of some enigmatic blood-poisoning, which has been given a very long name by Winckel, one that includes all the leading symptoms of this disease, namely, *cyanosis afebrilis icterica perniciosa cum hæmoglobinuria* (malignant icteric afebrile cyanosis with hæmoglobinuria), but others call it simply *Winckel's*

disease, as Winckel was the first to describe an epidemic of this disease in the lying-in hospital of Dresden in 1879.

The child, born at full term and perfectly normal, becomes from the very first days of life restless and cyanotic, the discoloration being distinctly seen not only on the face and extremities, but also on the trunk. Following this there sets in hæmoglobinuria and icterus (of the conjunctivæ), collapse and convulsions with fatal issue within from one to three or seven days. The temperature remains normal all the time. This disease is almost absolutely fatal, as of twenty-three infants suffering therefrom only one recovered.

In older children jaundice is most often caused by catarrh of the duodenum and obstruction of the bile duct by mucus; this is CATARRHAL JAUNDICE—*icterus catarrhalis.* It is characterized by the following symptoms:

(1) It develops simultanously with some gastric symptoms, as painfulness in the epigastrium, coated tongue, loss of appetite, constipation or diarrhœa.

(2) The fæces are entirely, or rather considerably discolored, while the urine is abnormally dark due to the presence of bile pigments.

(3) The liver is somewhat enlarged and painful upon pressure.

(4) This jaundice is accompanied by no severe general symptoms, but only sometimes by a moderate febrile condition.

(5) Ends with recovery in a few days, at the most in two or three weeks.

In the symptoms and course it resembles, and perhaps is identical with, the so-called EPIDEMIC OR INFECTIOUS JAUNDICE, which always exists with fever, differing from the preceding form, not only by its epidemic spreading, but also by the almost constantly observed albuminuria and spleen tumor. It is most possible and even probable that the so-called catarrhal jaundice is nothing but a mild form of infectious icterus. In some cases epidemic jaundice is accompanied by very high temperature (about 104 degrees F. and higher), typhoidal manifestations on the part of the nervous system (dry tongue, delirium), albuminuria, enlargement of the liver and spleen and frequent perspiration.

The course of the disease is typical, with a usual termination in recovery within seven to eleven days.

Such a form of jaundice is described under different names, as typhus hepaticus, nephrotyphus biliosus, typhus abortivus cum ictero et nephritide. Vasillieff holds this disease as a variety of bilious typhoid and described the same under the name of infectious icterus.* Of ten of his cases one was an eleven-year-old boy.

The disease usually begins suddenly with fever, headache and vomiting; after from three to five days icterus appears as well as other characteristic symptoms, that is, discolored dejections, increased liver and spleen, albumen in the urine, delirium. Vasillieff observed in his patients an extreme painfulness of the muscles, especially of the calves. In an eleven-year-old boy the occipital muscles were especially affected, so that on the fourth day (twenty-four hours previously to the jaundice) contracture of the neck was noted.

Although in the majority of cases epidemic or sporadic icterus ends with recovery, yet a fatal termination is also possible, even in those cases which begin in the form of an entirely benign catarrhal jaundice.

Kissel advises us to be especially careful with the prognosis in weak, anæmic children, as well as when the icterus is very pronounced and is long continued. He also regards the appearance of even a slightly excited condition as a very bad omen.**

It has not yet been decided whether this typhoidal form of jaundice differs from an ordinary epidemic catarrhal icterus only by the degree of development of the attacks, or by the nature of the infection.

From all these forms of essential jaundice one must differentiate icterus which complicates other infectious diseases, for instance, relapsing fever, malarial, pyæmia, etc.

Afebrile *chronic icterus* depending upon diseases of the liver occurs very rarely in childhood. Its diagnosis is made on the ground of symptoms on the part of the liver, as in adults.

Botkin's Clinical Gazette, 1888, No. 22-26.

**"*Medic. Obozrenie,*" 1898, May.

DISEASES CHARACTERIZED BY BLUISH TINT OF THE SKIN.

Cyanotic tint of the skin, the so-called CYANOSIS, is most pronounced on the wrists and feet, as well as on the lips. Cyanosis is indicative either of a local stasis of venous blood, or of the general lack of oxygen in the blood and its overfilling with CO_2 (carbon-dioxide).

Circumscribed cyanosis involving one or both wrists, sometimes one or two fingers, disappearing in summer, but always appearing in winter, after short exposure to cold weather, depends on disorder of vascular innervation and points toward chronic chilblain.

General cyanosis of the whole body and mucous membranes, or (in mild cases) cyanosis of the limbs alone and the lips, is due to the disorders of circulation in general and denotes some serious affection of the lungs or heart. The quicker the cyanosis develops, the more dangerous is the outlook, so that the latter is in acute cases always more ominous than in chronic ones. Cyanosis is an especially unfavorable sign, first, in cases of inspiratory dyspnœa because of laryngeal stenosis, whatever its cause may be—croup, laryngismus stridulus or foreign bodies; and second, in acute infectious diseases, for instance, in scarlet fever, diphtheria, pneumonia, etc.

Cyanosis develops with comparative sluggishness when the lung is compressed by a pleuritic exudation, and still slower during chronic heart lesion, inherited or acquired. During inherited heart affections cyanosis appears either from the first days of the child's life, or one or two years after birth. Acquired cardiac defects in childhood are mostly referred to the mitral valve; in such cases, as long as compensation is absent, cyanosis is observed, but in the period of disorder of compensation not only cyanosis appears, but also dyspnœa and dropsy, while in inherited cardiac lesions cyanosis not infrequently occurs isolated.

EXANTHEMATOUS DISEASES.

Although different eruptions very often occur in childhood, yet on account of their being identical to those in adults we shall not describe them minutely, leaving this to the text-books of dermatology, limiting ourselves only to the most essential and important evidences necessary in the diagnosis of diseases.

In describing the eruptions we shall not hold to the ordinary pathologico-anatomical classification of skin-diseases, but will simply divide them into several groups on the ground of the most pronounced symptoms, although we confess that it is difficult to avoid repetitions with such a mode of exposition of the subject.

SKIN-DISEASES CHARACTERIZED PARTICULARLY BY REDNESS.

In this group we include all kinds of erythematous eruptions, no matter if they depend on simple hyperæmia or on inflammation (simple or inflammatory erythemata). The redness may be a diffuse one, occupying large portions of the skin or even the whole surface of the body, or a spotted one. In both cases it disappears upon pressure by the finger, but reappears when the pressure is removed (differing from hæmorrhages which do not become pale upon pressure).

A diffuse redness of the whole surface of the skin in new-born always appears during the first days of life, being therefore called PHYSIOLOGICAL ERYTHEMA OF THE NEW-BORN. Its diagnosis is made directly on the fact of the age (the first two or three days after birth). Within a few days after the disappearance of this erythema a desquamation of the epidermis all over the body usually sets in—*physiological exfoliation.*

Something similar, but much more developed, is observed in the new-born during a disease which is peculiar almost entirely to them, having been described by Ritter (Prague) under the name of DERMATITIS EXFOLIATIVA. In this disease, as well as in physiological erythema, a diffuse redness also appears all over the surface of the skin, the general condition of the child being excellent (he has no fever, takes the breast well, despite the affection

of the circumference of the mouth, see below), which is followed by desquamation of the epidermis. Nevertheless, it is not difficult to differentiate these two conditions, first, in view of the age of the patients (exfoliative dermatitis almost never begins earlier than the end of the first week or later than the twenty-first day) and secondly, on the ground of the course.

In typical cases the exfoliative dermatitis begins not at once all over the body, but with the *face,* namely, its lower half; not rarely the circumscribed redness occupies the circumference of the mouth and the chin, spreading on the following day over the trunk, and still later to the extremities, the general condition remaining afebrile. The redness scarcely reaches the feet before desquamation of the skin of the lips begins, with the formation of small, thin crusts which give rise to fissures radiating from the margins of the lips in all directions, so that the whole lower portion of the face becomes covered as if with cuirass. On other parts no crusts appear, but only roughness (drying) of the epidermis is to be noticed. Exfoliation over considerable areas soon follows, there being especially thick detachments on the palms and soles. The denuded skin does not appear wet, but only slightly moist and therefore glossy and of dark-red color. The redness rapidly changes to a paleness and the skin on the next day is covered with scales, and after one day more becomes of normal color, while the furfur-like exfoliation remains for some days more.

This disease is distinguished by its cyclic course, ending with recovery in from seven to ten days; but the patient after that exhibits a great disposition to secondary skin diseases in the form of eczemata, small abscesses and furunculi which protract the final recovery for many days and even weeks.

Deviations in the symptoms and course may be observed in the redness occupying the whole body at once, or limited only to the lower half of the face, leaving the trunk almost free, although later on the epidermis finally peels off. More rarely it happens that the face alone remains intact. Sometimes on the reddened parts of the face and trunk, as well as on the forehead and temples, thickly crowded vesicles appear with transparent contents, as in miliaria crystallina, which later on coalesce, dry up and are changed by the exfoliation of the epidermis. In other cases

the epidermis of the reddened parts is elevated in large blisters, as in pemphigus, containing yellowish, serous fluid.

The differentiation of this disease from physiological erythema was mentioned above; from erysipelas it differs by the absence of fever and sharp boundaries of the redness, as well as by rapid spreading. Pemphigus is resembled by some anomalous forms, which occur with the formation of blisters, but the essential difference is that blisters appear during pemphigus on the normal skin, while here only on the reddened integument. Blisters in pemphigus usually arise not all at once, the disease becoming protracted for an indefinite time, that is, it does not exhibit such a typical course as exfoliative dermatitis.

Because of fissures around the lips and in the corners of the mouth it is quite easy to confound exfoliative dermatitis with syphilis, but besides the absence of other symptoms of hereditary syphilis (see the section on the same), this disease may be excluded on account of the short and typical course alone.

Because of diffuse redness and membrane-like exfoliation of the epidermis one could mistake exfoliative dermatitis for scarlet fever, but the mistake may be avoided by giving due heed to the normal temperature and the absence of sore throat.

In children of all ages redness of the whole surface of the body, or, at least, of its larger portion, occurs notably in scarlet fever; we shall speak therefore in the part devoted to this disease of the rashes which resemble it.

A diffuse redness of small areas occurs during various inflammations of the skin itself or of the underlying parts as well, as in ordinary, that is, non-inflammatory, hyperæmias. In the case of inflammation the reddened portion is hot to the touch, painful upon pressure and sometime quite swollen; older children complain of a feeling of soreness or burning. Here we have, for instance, ERYSIPELATOUS INFLAMMATION OF THE SKIN, a highly febrile disease in which the redness is distinguished by *being very pronounced and having sharply-defined edges.* If erysipelas, growing pale on previously affected places, spreads with every day to new places, then it is spoken of as *wandering erysipelas,* erysipelas migrans, and if erysipelatous inflammation be accompanied by the formation of blisters, then it is known as *bullous erysipelas*—erysipelas bullosum. If erysipelas occupies

the face, then inflammation of the skin is accompanied by considerable œdema of the subcutaneous cellular tissue of the eyelids. Such a clinical picture may also be obtained in *acute eczema of the face*, but besides the fact that eczema is not accompanied by so high a temperature as erysipelas, the difference is that the redness in eczema does not exhibit such sharp boundaries and that because of the rapid formation of vesicles the reddened skin does not remain smooth, but assumes a shagreen aspect, becoming covered, after the lapse of a short time, with vesicles and crusts.

Among the diffuse inflammatory erythemata may also be included redness of the skin due to a slight burning, for instance, by the rays of the sun—CALORIC ERYTHEMA (*erythema calorieum*). Such an erythema may be seen in children who, while bathing, remain for a long time in shallow water, disporting in the sun. In such cases the redness is not so bright, and does not have such sharp boundaries as in erysipelas. The chief ground for the diagnosis in such cases is the history, which at once determines the ætiology.

Erythema due to prolonged pressure, or to different irritations of the skin, as mustard-plasters, iodine, poultices, caustic dejections (erythema of the buttocks) or secretions (erythema of the upper hip in rhinitis and so on) are always limited to the place subject to the irritation, so that their diagnosis is readily effected. Again it is not generally difficult to determine the cause of redness of the skin during inflammation of the underlying parts, that is, of the cellular tissue, glands or bones.

Concerning diagnosis of more interest is a diffuse redness sometimes occurring in the precursory period of small-pox and known under the name of ERYTHEMATOUS PRODROMAL SMALL-POX ERUPTION. This is peculiar of milder cases of small-pox, while in more severe instances a *petechial prodromal eruption* is oftener met with (see hæmorrhages under the skin). Erythematous small-pox eruption appears either in the form of diffuse redness over larger or smaller areas (rarely over the whole body, as in scarlet fever), or in the form of spots, which resemble measles. These rashes have no favorite places, occurring on the trunk, as well as on the limbs, but sparing the face. It may

perhaps be said that local diffuse erythemata occur more often on the extensor parts of the limbs. Generally they appear on the second day of the fever (sometimes even on the first day), and last from twelve to thirty-six hours. The frequency of appearance of this prodromal erythema depends on the character of the epidemic. During an epidemic this rash makes it possible to diagnose small-pox one or two days before the disease actually appears.

In the prognosis prodromal erythema has a favorable significance, and the more wide-spread it is, the better, inasmuch as it has been noticed that its intensity is in reverse proportion to the abundancy of small-pox pustules.

Spotted erythemata have a very different meaning, which becomes evident partly by the nature of the rash itself, that is, by the size and shape of the spots, the degree of their color, spreading, etc., partly, however, by the concomitant symptoms. The size of the spots varies in different cases from that of a pea up to a half-dollar. Small, spotted erythemata known under the name of ROSEOLA consist of pale-pinkish spots of the size of a pea and somewhat larger, of a round or oval shape; sometimes they are somewhat elevated above the surface of the skin and may then be felt by the finger as a slight elevation or papule.

Roseola does not occur as an independent affection, but often complicates other, usually febrile, diseases. In a diagnosis it is of great value, but not by itself, as in different diseases this rash is not peculiar enough to make the diagnosis possible, therefore its value lies only in connection with other symptoms. Nobody, for instance, would diagnose typhoid fever because a few roseolous spots appeared on the back and chest of a patient, nevertheless, in the presence of other symptoms this small eruption will be sufficient to with certainty exclude, in doubtful cases, miliary tuberculosis and throw the balance in favor of typhoid.

If roseola early appears in supposed typhoid (the fourth or fifth day), abundantly and at once, then this alone is indicative more than all other symptoms of typhus fever and against typhoid.

In new-born and in children of the first weeks of life roseola together with chronic rhinitis, determines the presence of hered-

itary syphilis. At any event, roseola syphilitica is so characteristic of itself that syphilis may be sometimes recognized from a spot alone.

The peculiarities of a syphilitic roseola consist in the following: This rash is afebrile and *chronic*, slowly appearing and still more slowly disappearing (it remains for weeks, while the majority of roseolæ of other origin disappear after one or two, or at most, a few days). The hyperæmia is soon complicated by pigmentation, so that upon pressure a yellowish trace remains in the place of the spot. A syphilitic roseola consists of smooth spots only in the most recent cases, but they very soon assume the papular character, that is, proceed over the surface of the skin. It is especially characteristic if only the margin of the spots is elevated, and when the depressed center of the spot is surrounded as if by a cushion. Not less typical of syphilis is also the formation of madidant papules, the favorite locations of which are the anal region, scrotum, chin and folds of the neck.

Occurring simultaneously in several members of the same family and accompanied by fever, roseola denotes rubella or measles. Although in typical cases of measles the bright-red color of the spots, their considerable size (due to coalescing of several) as well as the papular character makes this papular rash similar to roseola, yet in some cases of mild measles, and especially in anæmic and exhausted children, the morbillous eruption may have a purely roseolous character. About the differential diagnosis of measles from similar processes see the section on measles.

Although roseola in many cases aids the diagnosis, still on the other hand, by appearing, so to say, at unreasonable times, that is, accidentally, it may lead the physician astray. To avoid such an error one must be guided in the diagnosis by a combination of all concomitant symptoms and not to attach the prime and the deciding importance to the eruption alone, which in childhood may occur in the most varied febrile diseases. This *accidental roseola* usually appears in the beginning of fever, and is very inconstant, because it usually disappears within twenty-four hours or even within a few hours. Such forms of temporary roseola, known also under the name of infantile erythema

(erythema infantum) are mostly peculiar to small children, of about two years of age, in whom it also accompanies dentition and all kinds of sore throats, bronchitis, and even pneumonia.

There are, however, some diseases in which roseola also occurs in older children, namely cerebro-spinal meningitis and vaccina.

For vaccinic erythema (erythema vaccinicum) it is characteristic, to some extent, that it manifests itself during the period of efflorescence of the pustules (from the eighth up to the tenth day) and that the same occupies the limbs mostly, while the majority of other erythemata prefer the trunk. Vaccinic erythema disappears within two or three days without leaving a subsequent desquamation.

So far we have only mentioned symtomatic roseola whose importance depends particularly upon concomittant symptoms, but, besides these there exist other forms of spotted eruptions which serve as an expression of essential skin disease. These eruptions occur both in older children and in adults. The diagnosis of some of them is considerably aided by their having a favorite localization. For instance, ERYTHEMA MULTIFORME most readily affects the dorsal surface of the wrists and feet, without spreading in many cases further than the forearms. This rash in the beginning consists of bright-red nodules, the size of a pin's head and somewhat larger. This rash is given the name —"*multiforme*" because of the changes exhibited in its further course. The papule may grow pale and disappear, becoming surrounded by a red ring, annular erythema (erythema annulare); in its turn this ring also, while disappearing, changes its color, and around the same there appears a new, bright red areola, erythema iris; one ring meets the other, so that the bordering redness disappears and wave-like red lines are obtained—erythema gyratum; if on the place of the nodules and areolæ vesicles apear, then the so-called herpes iris is obtained.

To the characteristic peculiarities of this erythema multiforme there may also be added absence of itching and pain, and its disappearance within a few days without desquamation. Should it be protracted for about two or three weeks such course would be accounted for only under the influence of new eruptions which may then spread even to the face and trunk.

In the beginning of its appearance multiform erythema may be accompanied by fever. In view of the typical localization, this rash is promptly to be recognized.

In the beginning of its appearance when papules make themselves evident, and especially in those rare, anomalous forms in which the face also becomes involved, doubt may arise regarding small-pox; the latter, however, may be readily excluded not alone because of special localization, but also by the bright red color of the erythema eruption, the small-pox papulæ are of pale tint.

In the further course, when red rings appear, one might suspect herpes tonsurans, against which there is also the question of localization (this eruption selects the face, the neck, the trunk), as well as the character of the ring, which in annular erythema is smooth, free from scales and crusts, while in herpes tonsurans it is formed by minute thickly-crowded vesicles or crusts.

Another eruption belonging to the group of exudative, spotted erythemata with a characteristic localization on the legs is NODULAR ERYTHEMA—*erythema nodosum*. This eruption is caused by a serous exudation into the substance of the skin, so that flat elevations are formed on its surface, being easier noted by touch than by the eye; on palpation they seem to be like solid nodules on the skin and are from the size of a pea up to that of a walnut and even larger. The color of the nodules is reddish, later on becoming blue and yellow, as in a bruise, due to contusion, hence the name—contusiform erythema. Some spots, however, disappear without changing color, simply becoming pale. The favorite regions affected by the eruption are *the legs* and *the forearms;* rarely does it spread to the thighs, and still more rarely to the face; and if it ever occurs on the trunk, then only in the most exceptional instances. Should a rash similar to nodular erythema appear, the legs remaining free from the spots and nodules, then it is positively not a nodular erythema.

The largest nodes, and the most *painful* to touch, are situated on the anterior surface of the leg. Around these nodes there is sometimes a noticeable swelling of the skin, simulating

periostitis, but the fact of nodes existing upon other parts clearly determines this point.

Nodular erythema in children may be accompanied by fever even when the number of the nodes is scanty; two or three nodes, for instance, are sufficient to explain fever of 38 to 39 degrees C. (100.4 to 102.2 degrees F.). One who had never seen such a rash might confound it with various diseases in some respects similar; for example, I have observed instances in which it was taken for rubella, urticaria (although itching, as well as white blisters are here observed) and for periostitis.

Among disease with a definite localization I also place the spotted form of HERPES TONSURANS—*herpes tonsurans maculosus*, occurring on parts which are not covered with hair. Its favorite situations are the covered portions of the neck, as well as the trunk, seldom does it occur on the limbs and almost never on the face. (In one case of a very abundant rash on the neck and trunk I observed its extension to the chin also). The rash consists then of round and oval, pinkish-white, smooth spots which begin to desquamate within two or three days, becoming covered by a thin sheath of quite thickly crowded scales. Within from three to five days the rash disappears. In the commencement it itches slightly. The size of the spots is that of a pea up to that of a dime. In the shape of the spots and the duration of their existence, herpes tonsurans maculosus is most similar to spotted syphilis, but readily differs from the same by the mild itching, absence of any other sign of general syphilis (swelling of the glands, affections of the mucous membranes of the mouth and fauces) and by the history.

If red spots of various size and form are spread all over the body and limbs, severely itching and very readily changing their place (without desquamation) disappearing on one place and rapidly arising on a new one, then we may positively say that we have to do with HIVES—URTICARIA.

In the center of many of these spots, and characteristic of urticaria, white blisters are to be seen, as if due to a burn by nettle, hence the name. In mild cases the whole eruption consists only of such white blisters, sometimes surrounded by a red areola. Urticaria is frequently accompanied by fever or

gastric symptoms in the form of vomiting, abdominal pain and diarrhœa. As to the diagnosis there is of interest a minute urticarial eruption, the so-called lichen urticatum s. urticaria papulosa, which by the size of the papules (blisters) and reddish tint is very similar to measles or small-pox (the first day of eruption). Inspection of the whole surface of the skin usually immediately clears away all doubt, because somewhere, particularly on the legs and abdomen, one will succeed in finding the typical, larger, whitish blisters. Besides this a violent itching is *necessarily* present, which is absent in measles as well as during the first period of small-pox.

Urticaria appears either as an independent disease under the influence of certain diet (idiosyncrasy to strawberries, crawfish, mushrooms), or some drugs (quinine, chloral hydrate), or complicates some other disease, for instance, scarlet fever or measles. In both events the causes of urticaria are in the blood. In another series of cases the disease is a result of local irritation of the skin, for instance, by nettle, bites of mosquitos and other insects, as well as from the well-known hairy caterpillars creeping over the skin.

In some children urticaria occurs as a chronic disease and then it may become protracted for years with various intervals, recurring under the influence of indefinite and unappreciable causes. If chronic urticaria, confined to the legs, be observed in small children, then it is very apt to bring about the development of prurigo.

Dealing with an erythematous rash one should also bear in mind MEDICAMENTOUS ERUPTIONS which, although they may occur in various varieties are most often met with in the form of different spotted erythemata. Especially well-known in this regard are the belladonna preparations, because a diffuse redness of the skin, together with dryness in the throat and wide pupils, belongs to the constant symptoms of poisoning with this drug. In idiosyncrasy the same or a spotted erythema arises in given individuals after moderate (not toxic) doses of quinine, sodium salicylate, antipyrine, chloral hydrate, opium, potassium iodide, etc.

The diagnosis of medicamentous eruptions in general, and of erythemata especially, is sometimes very difficult; therefore, in

doubtful cases for the purpose of verifying the diagnosis the patient is again given the same dose of the drug supposed to have produced the appearance of eruption, because *the medicamentous eruption is characterized by the fact that it may be produced in the same patient voluntarily through the same dose that caused the rash in the first place, and that it immediately disappears as soon as the drug is suspended.*

Since the same drug in different persons may cause different forms of eruptions, and, on the other hand, the same eruption may appear under the influence of different drugs, it is obvious that only from the history is it possible to ascertain upon what, in any given case, the eruption seemed to depend.

DISEASES CHARACTERIZED BY THE APPEARANCE OF MINUTE CUTANEOUS HÆMORRHAGES.

Minute cutaneous hæmorrhages, the so-called petechiæ, vary decidedly in their size, from that of a small spot to that of a dime. They are characterized by a cyanotic hue, sharply-defined margins and also by not disappearing upon pressure. Petechiæ may occur as the result of traumatic influences or from internal causes, that is, on account of a peculiar fragility of the vessels under the influence of impaired nutrition.

Traumatic petechiæ due to stings of fleas and bugs are easily recognized by the external aspect; they are all of an equal, spotted size. Around fresh petechiæ there is always a pale-pinkish area or halo of hyperæmia. They generally involve only the covered portions of the body and especially the lumbar region. Sometimes the skin of the part affected by petechiæ is covered by very minute islets of a black powder which, under the influence of acetic acid and sodium chloride, gives under the microscope hæmin crystals (the dried, transuded blood).

To traumatic petechiæ we also refer spotted hæmorrhages in the skin of the face after an intense straining, for instance, during vomiting, coughing or general convulsions.

Cutaneous hæmorrhages due to internal causes denote an especial disposition of the organism to spontaneous hæmorrhages, that is, to hæmophilia, which may be constant or temporary. Temporary hæmophilia is either an independent disease, or a symptom of other diseases, as scurvy, leukæmia, malignant

anæmia and various infectious diseases, as hæmorrhagic small-pox, measles, scarlet fever, etc.

Temporary hæmophilia, as an independent disease is known under the name of PURPURA. This occurs in different forms among which all possible transitory stages exist. As typical representatives we have: Purpura simplex, purpura hæmorrhagica (s. morbus maculosus Werlhofii) and purpura rheumatica (s. peliosis rheumatica). All these diseases in the majority of cases develop without fever, but yet are sometimes accompanied by quite considerable and durable temperature. In all forms there appear on the skin (especially on the legs) petechiæ of different size (from that of a pin head to that of a dime, and larger).

The difference between these two diseases is that, in purpura simplex, hæmorrhages are seen only on the skin, while in purpura hæmorrhagica, besides this, there are always hæmorrhages also from the mucous membranes, most often from the gums and the nose, and in severer cases from the kidneys and bowels also. In rheumatic purpura, besides cutaneous ecchymoses, affections of the joints, especially of the knees and ankles, are also observed. They become considerably swollen and more or less painful upon pressure and movements.

In all these cases the fever is notable in being very irregular in its severity, as well as in duration: either an increased temperature remains only a few days, or it becomes protracted, with intervals, for a few weeks.

The causes of purpura are unknown; the influence of cold is admitted by many.

Notwithstanding the characteristic symptoms, a mistake is possible at the bedside. If, for example, along with petechiæ a violent fever sets in, then purpura may be suspected as hæmorrhagic small-pox. Against small-pox and in favor of purpura we have the typical scars of vaccination and the primary appearance of cutaneous ecchymoses on the legs (while the small-pox petechiæ are first of all located on the lower portion of the abdomen and on the inner surface of the thighs).

In other cases fever may start several days previous to the appearance of petechiæ and then a doubt may arise concerning typhus fever. The differences are that well-pronounced pete-

chiæ in typhus fever in children belong to the curiosities, of prime importance being roseola typhosa; further, in typhus fever we have spleen tumor and regular fever, which is not peculiar to any form of purpura.

From scurvy (a very rare disease in childhood) Werlhof's disease differs both in symptomatic and ætiological respects. As to the symptoms, then, first, in scurvy hæmorrhages from the mucous membranes are comparatively rare, but bleedings in the muscles, under the periosteum and in cellular tissue are frequent; while it is the contrary in hæmorrhagic purpura. Second, in scurvy among the constant and quite characteristic symptoms we find ulcerous inflammations of the gums, manifested by their considerable swelling and friability and severe stench from the mouth (stomacace), while in hæmorrhagic purpura the gums although they bleed yet in other respects they are normal. Third, in scurvy the local symptoms are not only of the hæmorrhagic, but also of an inflammatory character, the inflammation easily terminating in ulceration and purulent decay of the tissues (gums), subcutaneous abscesses, inflammation of the serous membranes, especially those of the pleura and pericardium. Fourth, in scurvy, many days previous to the appearance of hæmorrhage there is pronounced malnutrition, the so-called *scorbutic cachexia*, which is manifested primarily by *general weakness* and a too rapid fatigue, so that the patient cannot well engage in any physical exercise. Palpitation and uneasiness in the chest appear even during slight exertion, and patients often complain of *muscular pain* which increases during movements and passes away after lying down. Further, there are observed *sensitiveness to cold, sleepiness,* and *mental dejection.* Advanced malnutrition is also manifested in the face, which seems to be fallen in, the eyes being sunken.

The skin is of an earthy-yellowish tint, the epidermis is dry and easily desquamates. In purpura, on the contrary, hæmorrhage appears while the patient is in good health, weakness and anæmia developing secondarily because of loss of blood.

The difference between scurvy and hæmorrhagic purpura concerning the ætiology is that the former arises because of poor hygienic and dietetic environment. If such debilitating surroundings affect the majority of the inhabitants of a certain

locality (for instance, during a year of famine), then scurvy assumes an epidemic character; while purpura does not occur in epidemics and sometimes no productive causes can be detected for separate cases of this disease. On this account Immermann said that, *"We have the more right to refer any given case of hæmophilia to purpura, the less data we have concerning its ætiology."*

But simultaneously with typical cases, that is, when purpura suddenly appears in entirely healthy children, there are also less typical ones, that is, such as when hæmorrhages occur in exhausted children (purpura cachectica), in those living in a bad hygienic—dietetic environment. These cases must be looked upon as transitory, between purpura and scurvy. They differ from hæmophilia by the latter usually being of hereditary origin and by its continuing for years. Families of hæmophilic persons consist usually of many children. Hæmophilia affects the males, while the girls remain apparently healthy, but communcate hæmophilia to their offspring and again only to males.

Besides spontaneous cutaneous hæmorrhages, hæmophilia is characterized by abundant hæmorrhages from insignificant wounds (cut of the finger, extraction of a tooth, etc.).

Hæmophilia is most resembled by cases of relapsing purpura, but the difference between them is that during the intervals between the relapses of the purpura the child does not exhibit any symptoms of hæmophilia, so that he is quite careless about accidental wounding.

[*Barlow's disease* must also be taken into consideration in the differential diagnosis of different forms of purpura.

This disease used to be described by different authors in America and Europe as "scorbutus of nurslings," or "acute rachitis," but Heubner (Berlin) suggested the name of Barlow's disease; as it differs in many clinical and anatomical features from scorbutus and has nothing to do with rachitis. (Kassowitz, of Vienna, did not see a single case of Barlow's disease among 20,000 patients attending annually his policlinic.)

This disease was described in Germany by Möller in 1859, but more fully in 1883 by an English physician, Barlow; therefore, some authors in Germany call it Möller-Barlow disease.

The essential features of the affection consist in a hæmor-

rhagic process setting in in the bones and periosteum, but not an inflammation. The symptoms:

(1) *Severe pain upon touch, especially in the lower extremities,* while in rachitis the child usually does not complain of pains in the legs; every passive movement is painful and the child keeps the lower limbs drawn toward the abdomen. When left alone, the pain disappears suddenly.

(2) The second symptom is *swelling,* again of the lower limbs, located especially around the joints, thus leading to a false diagnosis of rheumatism. The child at the same time grows thin, pale and emaciated. To differentiate the disease from rheumatism one should note that the swelling affects, not the joints, but the epiphyses of the bones, especially those of the knee-joint, spreading upwards to the middle of the diaphysis of the femur. Similar swellings on the legs and upper extremities often appear, so that a suspicion may arise regarding osteomyelitis. But at this period there usually appears the third characteristic symptom:

(3) *Hæmorrhage of the gums* (only in children that have teeth). This hæmorrhage takes place most often in the gums of the incisors, but affects other portions as well. The hæmorrhage may take place in the orbits and in one case of Heubner on the skull-bones.

(4) The disease is often associated with *fever.*

The disease mostly affects nurslings of the last four months of the first year of life (in Heubner's cases), and in those who have been bottle-fed, even though the feeding was conducted according to the rules of science and the babies seemed in the best hygienic conditions under medical control. The cause of the disease is, according to Heubner, artificial feeding with sterilized milk, as the change of the latter for an unboiled milk leads to quick recovery of the patients.

The pathology of this disease as reported by Ziegler, Stoos, Schmorl, etc., consists in subperiosteal, periosteal and supraperiosteal hæmorrhages, as well as in hæmorrhages into the bone-marrow; the lymphoid (splenoid) marrow becomes converted into the so-called jelly-marrow, i. e. the marrow becomes poor with vessels and cells, and becomes converted into a friable substance, similar to embryological connective tissue (Ziegler—"ga-

lertmark"), the bone becomes, in place of the latter, porous and destructed.

The *prognosis* is good, provided a proper treatment be applied at the suitable time. This treatment need consist only in the change of diet. (See *The Therapeutic Index*).*—EARLE.]

Besides the above-mentioned varieties of purpura, there are some other forms which are of interest in the diagnosis. For instance, purpura may be accompanied by an urticarial rash, being then associated with itching—*purpura urticans;* in other cases the disease considerably changes because of complication with severe gastric symptoms, especially of *vomiting and violent abdominal pain;* constipation is often observed and sometimes bloody dejections are noticed. A few such cases were first described in Henoch's Text-Book,** which is the reason for this form being known under the name of Henoch's purpura. In both cases the abdominal pain would increase considerably under the influence of acids and sesquichloride of iron. Attacks of abdominal pain and cutaneous ecchymoses cause great tendency to relapses (this is a characteristic feature of such examples as Henoch claims), which results in the disease being protracted for many weeks; finally the sickness stops by itself. The relapses, or only the first attack, may be accompanied by fever. This disease is mostly noted in children about seven years of age.

A much rarer, but always a fatal, variety was described by Henoch under the name of *purpura fulminans* (foudroyant purpura). This malady is differentiated: (1) By the very rapid onset and spread of the ecchymoses, first on the legs, and then all over the body; and (2) By collapse with fatal termination within one to three days from the commencement of the disease.

[A case of recovery from purpura fulminans (purpura foudroyant) was reported by Boulloche. A four-year-old child was suddenly seized with fever, collapse and purpura. In a few hours the little patient exhibited on the lower extremities a

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*See O. Heubner: Uber die Barlow' sche Krankheit (*Berl. Klin. Wochenschr.*, N. 13, 1903). Hagenbach-Burckhardt: *Correspondent b. f. Schweizer Aerzte*, 1902, p. 748. Stoos: *Corresp. f. Schw. Aerzte*, 1902, p. 538.

**Kinderkrankheiten.* 3 Augl., p. 784.

great number of black-red patches of purpura and ecchymoses on the external surface of the right thigh.

The temperature was 40.5 degrees C. (104.9 degrees F.), the pulse 180 per minute and the respirations 60. There was complete unconsciousness, sub-delirium and slight convulsions ("carphologie"). Notwithstanding such ominous symptoms, the patient made a quick improvement under the influence of artificial serum and cool-baths and, contrary to what is usually observed in such cases of purpura when death is a rule, recovered entirely. On the oral mucous membrane there were no patches of purpura, and no albumen in the urine.*—EARLE.]

Hæmorrhages are usually absent from the mucous membranes (of eight cases which I have consulted in literature nose-bleed was observed in only two cases of Ström and Aretander).

The temperature usually remains normal, but sometimes rises considerably (in the case of Michaelis in a nine-year-old boy the temperature was about 40.8 degrees C.—105.4 degrees F.).

The age of the patients varied between nine months and six years and a half. The cause of the disease is unknown; in three cases fulminant purpura made itself evident soon after scarlet fever, in one after croupous pneumonia, in the remaining cases it appeared during complete health. The necropsies proved negative.

When ecchymoses become coalescent on some limb, the same appears swollen, of dark color and sometimes is covered with blisters, then the appearance of the disease, at the first glance, is much like that of gangrene; to exclude the latter, however, it suffices to call attention to the complete absence of a gangrenous odor.

In case of the appearance of vast ecchymoses all over the body, then *variolous purpura—purpura variolosa*—may be thought of. This is the most dangerous form of small-pox, because it ends with death within three to five days, frequently even before the eruption becomes evident. The further similarity to fulminant purpura consists in the rapidity of development of ecchymoses (in both cases new spots appear every hour).

La Semaine Méd., 1899, p. 366.

The difference is the following: The development of petechiæ in variolous purpura is usually preceded by a diffuse *erythema* on the trunk and limbs; on this red ground petechiæ and larger ecchymoses appear, especially on the *abdomen and chest,* as well as ecchymoses in *the conjunctivæ and hæmorrhages* from the mucous membranes of the nose, bowels and kidneys. Further purpura variolosa sets in with violent *fever, persistent vomiting* and (in older children) with severe pain in the back. Nothing similar is to be met with in purpura fulminans; here ecchymoses develop, especially on the limbs (but not on the abdomen), fresh spots are surrounded by a red ground and they are painful upon pressure. Usually there are absent elevation of temperature, hæmorrhages from the mucous membranes and incipient vomiting (although none of the authors mention the same). As a proof that Henoch in his cases did not have to deal with small-pox he gives only one reason, namely, that since 1872 not even one case of small-pox had been seen in his clinic; but he could with equal right refer also to the results of the necropsy, which proved his cases negative, while in variolous purpura there necessarily occur ecchymoses on the serous and mucous membranes as well as on parenchymatous organs.

Symptomatic purpura which accompanies leukæmia, malignant anæmia, *ulcerous endocarditis* and similar diseases, is of secondary importance in comparison with other symptoms of these morbid processes, and does not exhibit any interesting appearances.

Regarding the prodromal petechial small-pox rash which is of great value in the diagnosis of small-pox during the precursory period, we only say that not the aspect of the spots, but their localization is characteristic. They occupy in the beginning the lower portion of the abdomen and the inner surfaces of the thighs almost down to the knees, so that when the patient is lying on the back with the thighs adducted, then the petechial rash may be said to define a triangle, the apex of which is just above the knees, and the base limited to a line drawn across the abdomen through the navel; this is the so-called femoral triangle of Simon. Should there be a further extension of the rash, its next points of selection are the axillæ and the area of the large pectoral muscle (musculus pectoralis magnus—the upper and

the pectoral triangle of Simon. In other regions petechiæ rarely occur.

DISEASES OF THE SKIN CHARACTERIZED BY THE FORMATION OF VESICLES, PUSTULES AND CRUSTS.

Rashes which consist of vesicles are acute and chronic. In acute cases the vesicles may appear all over the body or they occupy only a limited area.

If *vesicles with transparent contents develop rapidly* all over the body, no matter whether they are thickly-crowded or not, then this may be varicella, sudamina crystallina or eczema.

In VARICELLA vesicles of various size (from that of a pin's head to that of a pea) are more or less general all over the body, but particularly *on the spine*. Fresh vesicles are filled with a *transparent content* and are surrounded by a *red area;* later on the latter disappears, and the vesicle either immediately dries up, or its contents at first become turbid because of admixture of purulent corpuscles. Eruption of varicella is accompanied by fever and *itching*. The whole disease up to the formation of crusts lasts about a week.

Varicella is a *contagious* disease; therefore in families consisting of many children its diagnosis is considerably aided by the eruption appearing in several children simultaneously. It would be a very serious mistake to confound this morbid form, because of the itching and contagiousness, with scabies, for the latter never appears at once all over the body. According to the character of the eruption varicella resembles the general vesicles of eczema. In making a diagnosis one should bear in mind, that acute eczema in the form of vesicles spread over the surface of the body, seldom occurs. I personally observed it only once in a boy eight years old after large doses of turpentine (a dessertspoonful twice a day on account of a doubtful diphtheria); a vesicular itching rash appeared on the third day of the treatment.

Acute eczema most often occurs in the form of very thickly crowded vesicles, but such an eczema is not similar to varicella altogether, because even when wide-spread it does not occupy the whole body equally, extending rather in islets all over the trunk, face and limbs, being accompanied not only by itching,

but also by œdema of the friable cellular tissue on the face and wrists.

In more circumscribed form a vesicular eruption sometimes appears after various cutaneous irritations, for instance, upon rubbing a part with irritating salves, the prolonged application of wet compresses, etc. The diagnosis of such rashes is easy on account of the history.

As to SUDAMINA, *sive miliaria crystallina,* this may be said to have no resemblance either to varicella or eczema, because it is characterized by two pathognomonic signs:

(1) The vesicles here always have a transparent content, are all of equal size and not larger than a small corn.

(2) They are located on an entirely normal, not reddened skin.

Its favorite place is the neck and the trunk, especially the chest and the abdomen, where the vesicles are quite thickly crowded. The limbs and the face remain free from the rash.

It is caused by profuse perspiration, which accumulates under the epidermis in the neighborhood of the orifices of the efferent ducts of the sudoriferous glands (the efferent duct of a sudoriferous gland passes through the sheath of the epidermis, and does not have its own walls, so that in case its lumen is closed by a swollen epidermis, the sweat accumulates under the latter lifting it in the form of a miliary vesicle). This is the reason why sudamina most often appear after acute febrile diseases in the period of crisis.

To the acute *circumscribed* vesicular rashes with *typical course* belong HERPES. This is manifested by the appearance of a *small group* of thickly-crowded, transparent vesiculæ on an *inflamed base.* The duration of the disease is three to four days, when the vesicles dry up in the form of a thin, small crust. Herpes appears most often on the lips and the nose. Of its importance in the diagnosis of febrile diseases see the Semeiology of Fever.

A separate variety is represented by the girdle-like herpes—*zoster,* which is peculiar by spreading along the course of the nerves and by its occupying only one-half of the body. As it corresponds most often to the intercostal nerves, the groups of vesicles are distributed along this or that intercostal space in

the form of a half-girdle, hence the name. It is obvious that on the limbs the rash cannot obtain the form of a bracelet, but spreads along the course of the limb. Zoster never involves a large space, because in the large majority of cases it is limited to some one particular nerve, or one of its branches (for instance, on the face the trigeminal never becomes totally affected).

The peculiarity of infantile zoster in comparison with that of adults is that the disease is seldom accompanied by neuralgiæ in children and it is still more uncommon that the latter persists after the disappearance of the eruption.

Eczema also belongs to limited vesicular rashes, differing from herpes, first, by the course being far from *typical,* and, second, by the eruption of the vesicles not being limited to a definite space; on the contrary, it shows a great tendency to spread to neighboring skin. The vesicles in eczema do not dry up to form thin, separate crusts, but coalesce with each other, become deprived of their covering, and therefore leave a denuded, red, madidant (wet) skin—eczema rubrum (red eczema). Not being protected from the influence of the air, the secretion later evaporates leaving thick, brownish crusts. Such crusts very often occur on the cheeks in nurslings and, because of similarity to the scorched skum of milk, have been called crusta lactea.

Eczema may remain very long (months). In the period of recovery, or when eczema becomes chronic, the skin ceases to be wet, but grows pale and becomes covered with whitish scales—eczema squamosum (scaly eczema).

The diagnosis of eczema is not difficult. Not only eczema madidans, but also the dry, desquamative form is so characteristic that a correct diagnosis is possible almost at first glance. However, in addition we have two more essential signs of eczema, namely, swelling of the neighboring lymphatic glands, and the considerable itching of the rash. These two signs may assist in the diagnosis of some doubtful cases, for instance, in the definition of the causes of crust formation on the hairy portion of the scalp.

In sucklings *crusts on the head* occur very often under the influence of two entirely different causes: seborrhœa and eczema.

Seborrhœa is an entirely harmless affection. The formation of crusts in this disease is due to a large accumulation of the

secretion of the seborrhœic glands of the skin of the head, this being mixed with dust becomes dried in a quite thick, brown cuirasse, covering the region of the large fontanelle or the whole arch of the scalp. An identical cuirasse may also be caused by eczema. Against the latter there is the absence of itching of the affected parts and of swelling of the occipital glands, which, in eczema, are easily palpable (near the lower margin of the hair on the occiput) in the form of spherical, movable, solid formations of about the size of a walnut. The further difference is that in seborrhœa, after the crusts have been denuded, an entirely normal skin makes itself evident; while in eczema the skin under the crusts appears red, wet and bleeds easily. Seborrhœa occupies only the top of the scalp, the lateral portions of the head remaining free from the crusts; while eczema often spreads in the form of islets, not only to this part, but also to the neighboring skin which is not covered with hair. The age is also of importance in the diagnosis; seborrhœa occurs oftener in sucklings during the first half of the year, while eczema develops during the second half.

In older children crusts on the head may depend upon eczema and FAVUS. In recent cases of the latter the crusts are always of red color, resembling sulphur, in which respect they decidedly differ from the brown crusts of eczema. In long-standing cases crusts of favus may lose their characteristic color, but then there is seen such a baldness of the head as is never met with in eczema; the remaining hairs may be easily plucked out and look as if covered with dust. After the removal of the crusts the skin in favus does not become wet.

Favus is an extremely persistent disease, lasting months, yet notwithstanding this the formation of crusts does not extend further than the hairy portion of the head, it is not accompanied by swelling of the occipital and cervical glands and does not itch.

Finally, from the microscopical examination of the hair after action upon it, during about two minutes, of a potassic hydrate solution (1:2), it is easy to find the round spores and chains of the favus-fungus (Achorion Schoenleinii). (Fig. 59.)

With eczema squamosum another mycotic eruption of the hairy portion of the head may be confused, namely HERPES TONSURANS. The fungus causing this rash—trichophyton tonsurans

(Fig. 60)—microscopically differs little from the preceding, but the expressions of the disease are entirely different. There appears on the head of the patient one or several bald places, from one to three centimeters in diameter. These spots are not covered with crusts, but with rough scales, amid which appear short hairs that have been broken at the roots. This rash does not itch, neither does it grow wet, by which circumstances it differs from eczema.

For therapeutic purposes it is important not only to diagnose eczema, but also to determine its cause in each separate

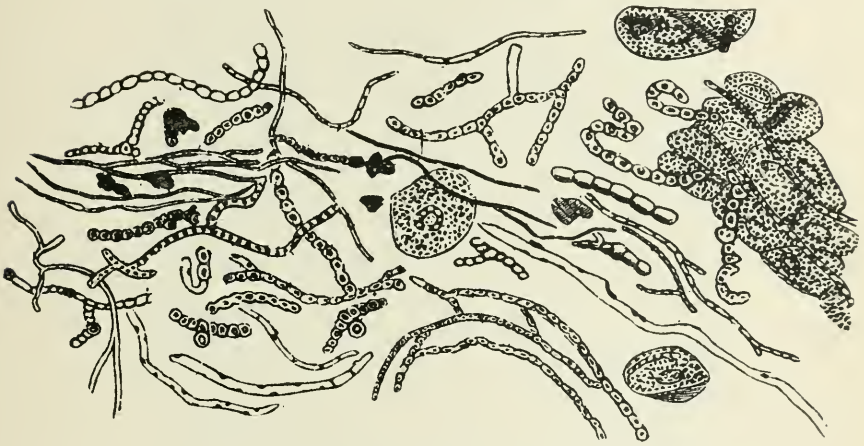

Fig. 59—Achorion Schönleinii (Eichhorst).

case, which may be readily done wherever eczema is the result of local irritation of the skin, but this is comparatively uncommon.

In many cases it is possible to draw correct conclusions regarding the cause of eczema from its situation. For instance, eczema of the *occiput* in older children, with a scratching of the skin of the upper portion of the spine, almost always depends upon lice (pediculi capitis) and in such a case even a superficial inspection of the hair renders it possible to note the presence of eggs of the insects in the form of yellowish formations the size of a papaver grain, which formations are found near the base of the hair.

Eczema in the form of minute vesicles and pustules on the wrists and fingers denotes scabies; wet places in the deep folds

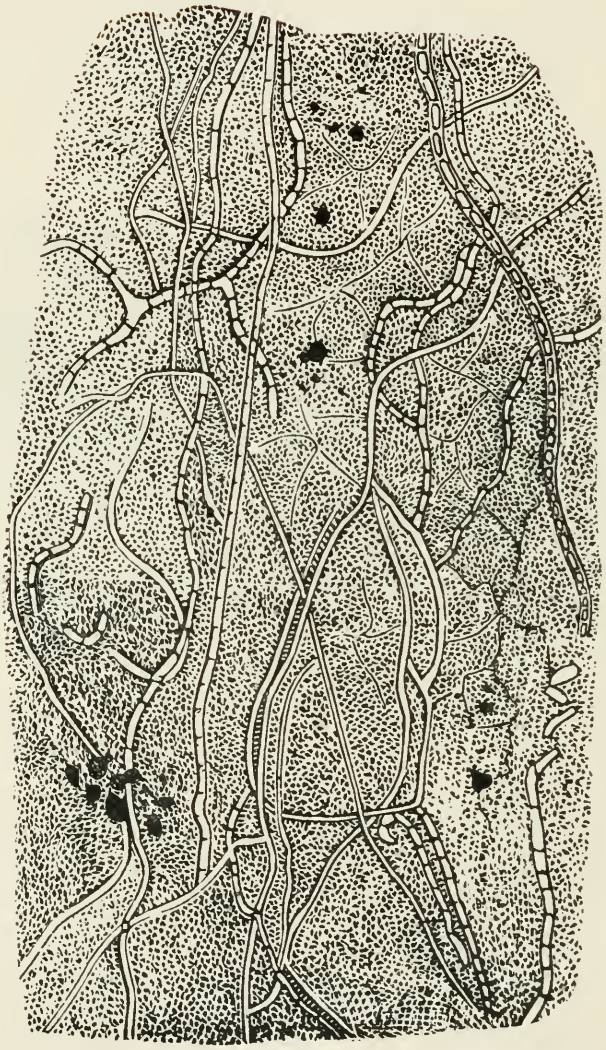

Fig. 60—Trichophyton Tonsurans (Eichhorst).

of the neck in fatty children, or in the axillæ and groins, depend upon irritation and maceration of the skin by the secretion of the sudoriferous and seborrhœic glands.

Much oftener we have forms of eczema due to unknown irritations. Such eczemas differ from the preceding by being persistent, because they depend upon the general abnormal nutrition of the organism, in nurslings upon obesity and rachitis; in those older upon scrofula.

If single pustules appear on the skin, the size of a pea, which, later on, become transformed into crusts, then such a rash is known under the name of *impetigo*. In the majority of cases the pustules develop simultaneously with other signs of eczema, the so-called pustular form of eczema—*eczema impetiginosum*. Such forms of eczema often occur because of severe irritations of the skin, as upon applying croton oil, in the vicinity of a fly blister, etc. But, besides this, there also occurs in childhood an independent pustular disease of the skin which is characterized by being *contagious* (impetigo contagiosum) and therefore not infrequently affects several members of the same family. In typical cases the eruption appears first of all on *the chin*. Here large pustules arise very quickly, soon becoming transformed into small crusts. The peculiarity of this rash is that the pustules are situated, not upon a reddened skin, as in eczema, but on an entirely healthy one, and they rarely coalesce into large patches. The disease lasts about three or four weeks, being sustained for a time by the appearance of new pustules in the vicinity of the old ones, or on new areas (because of auto-infection?). If several members of the same family become affected with this disease, then the diagnosis is easy; while in sporadic cases the disease may be viewed as an eczema, the more so if the rash itches somewhat. The difference is that the pustules are divided from each other by intervals of normal skin and that they do not seem to be inclined to coalesce and form a wet surface; to some extent the location of the rash on the chin is also peculiar to impetigo.

Impetigo contagiosum appears most often in children who live in damp dwellings.

Large crusts (about one centimeter in diameter), spreading over the legs, buttocks, and lumbar region, not infrequently

occur in scrofulous children. After the crust falls off a small ulcer obtains. This is the so-called *ectyma* which belongs to chronic diseases. It is accompanied by itching.

DISEASES OF THE SKIN CHARACTERIZED BY THE FORMATION OF SEPARATELY LOCATED BLISTERS.

If we see separately located blisters on the skin, filled with transparent or purulent contents, having the size of a large pea, or even of a walnut and larger, then we have to deal with PEMPHIGUS.

This disease is peculiar almost exclusively to new-born children of the first two weeks of life and is observed in two forms; in that of simple, benign pemphigus—*pemphigus benignus* and the syphilitic variety—*pemphigus syphiliticus*.

The eruption of blebs in both cases occurs rapidly and usually during the first days of life; the main difference is in the location of the blebs as well as in the concomitant symptoms. A plain pemphigus occurs in entirely healthy, strong, new-born infants, appearing especially on the trunk, as well as on the neck and thighs, but sparing the palms. However, the syphilitic variety, being a sign of a grave syphilis, always appears accompanied by other symptoms of this disease, mostly affects abortive, exhausted children, and is notably pronounced on the palms, soles and fingers.

The simple pemphigus of the new-born is really an acute skin disease, but it is not accompanied by fever. Chronic pemphigus, indicated by the constant appearance of new blebs for a period of months, occurs only in older children, and but rarely.

DISEASES OF THE SKIN ESPECIALLY CHARACTERIZED BY ITCHING.

Mothers often call the physician on account of a child apparently suffering with severe itching, especially at night, thus being restless in its sleep. Inspection of such a child may show that the skin does not exhibit any alterations aside from scratches. One must then hold the *itching* to be a manifestation of some *neurosis of the skin,* the cause of which is, in the majority of cases, general malnutrition, indicated by anæmia, rachitis and general nervousness.

In other cases the itching may appear after some irritation of the skin (for instance, rubbing with salted whiskey, salt-

baths) and on inspection we find numerous papulæ, spread all over the body or only on the legs; therefore, we can diagnosticate *papular eczema,* which very soon disappears after the removal of the cause, by which it differs from another papular, severely-itching eruption—*prurigo.*

This disease pursues an extremely chronic course (not only months, but even years) being in the beginning manifested only by itching and scanty papular eruption on the anterior surface of the legs, lumbar region and the plantar surface of the forearms.

If, in a long-continuing pruritus, we find wide-spread and pronounced changes of the whole skin, in some places in the form of pustules, crusts and pigmentations, with swelling of the axillary and inguinal glands, in a word, very extensive chronic eczema, then we can suspect either a neglected scabies, or an old prurigo.

It is not difficult to distinguish both these diseases, notwithstanding their apparent great similarity. First of all attention should be directed to the location of the principal changes of the skin, and then an inquiry into how long the child has been sick.

As already mentioned, prurigo starts on the legs and, in old cases, the skin of the anterior surfaces of the legs appears, in comparison, for instance, with the thighs and arms, exceedingly solid, thickened and dry. It can scarcely be pinched up into folds; while, contrary to this, the skin of the elbow and knee-joints remains normally thin and tender, entirely free from any rash. The same contrast is also exhibited by the tender skin of the abdomen in comparison with the rough skin of the back. In a word, prurigo affects chiefly the extensor surfaces of the limbs and trunk, while scabies shows a preference for the tender parts, so that the abdomen becomes affected more markedly than the back, the wrists more than the legs.

As to the duration of the disease, scabies spreads all over the body considerably quicker than prurigo, so that if the parents claim that the child has suffered with itching only a few weeks, then it cannot be prurigo. On the contrary, if the disease lasts with inconsiderable remissions a few months or years, becoming

aggravated during winter and subsiding during summer, then it is, most probably, prurigo.

We also add that severe itching is an invariable accompaniment of both scabies and prurigo, so that absence of itching directly excludes these processes.

[The diagram may be also assisted by the microscopical examination which will show the parasite of scabies—Acarus scabiei

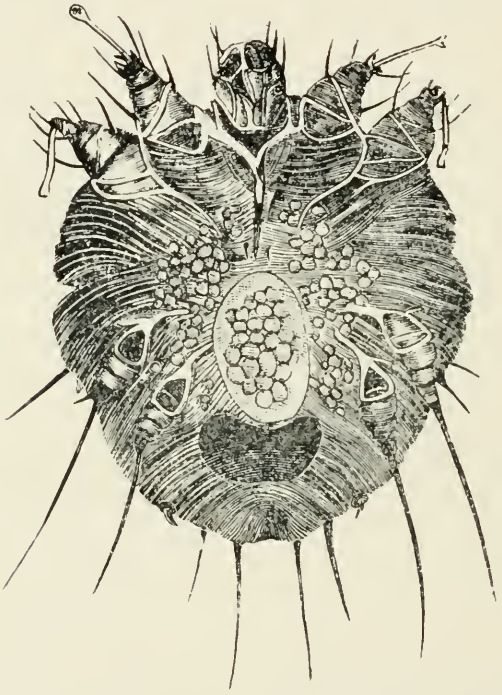

Fig. 61—Acarus scabiei (female) as seen from the ventral surface; a mature ovum within the body. Magnified 300 (from Eichhorst).

(Fig. 61)—as well as by noting the Acarian furrow (Fig. 62).—Earle.]

In acute diseases a severe itching of the whole surface of the skin necessarily coincides with urticaria and a wide-spread acute eczema, which morbid forms were spoken of above, as well as small-pox in the period of dessication. Insignificant itching usually accompanies scarlet fever and chicken-pox.

A circumscribed, local itching, which does not depend upon

eczema or some other rash, has an entirely different diagnostic meaning, depending upon the place of its appearance. For in-

Fig. 62—Acarian furrow: a—a mature larva; the black points denote the feces of the parasite visible at the ventral end. (From Eichhorst.)

stance, itching circa anum in the evening, as soon as the child is warmed in bed, serves as a very certain sign of the presence of oxyures (oxyuris vermicularis) in the rectum; itching of the

penis may depend upon the accumulation of smegma under the prepuce, and itching of the vulva in girls, on "whites"; itching of the nose is due sometimes to round worms; a periodical pruritus repeated at certain hours of the day in various portions of the body, and disappearing after quinine, is a manifestation of masked fever.

DISEASES CHARACTERIZED BY HARDENING OR ŒDEMA OF THE SUBCUTANEOUS CELLULAR TISSUE.

For the pediatrist there is an especial significance in the hardening of the cellular tissue observed in nurslings and known under the name of SCLEREMA NEONATORUM. This disease is peculiar of abortive and exhausted children. It consists in a peculiar hardening of the skin and cellular tissue first of the legs, and later on of the whole body. This hardening corresponds to a general collapse and considerable fall of the temperature of the body. Sclerema occurs in children in two forms: one is exclusively peculiar to new-born, being due to œdema of the cellular tissue and bearing the name of *sclerema œdematosum, s. œdema acutum neonatorum* (acute œdema of the new-born). The second, however, is oftener met with in children several months old and develops under the influence of an abundant watery diarrhœa, which causes loss of fluid by the cellular tissue, as well as hardening of the subcutaneous fat; this form is called *sclerema adiposum.* Both forms terminate in death within a few days.

The essential clinical difference touching these varieties is, in detail, that, in the former case, the size of the involved parts increases as during any œdema, while in the latter case there is a decrease. Regarding the differentiation of these conditions from sclerodermia adultorum (which, however, occurs also in children, and even in the earliest age) it suffices to say, that the latter has a very chronic course, and is not accompanied by disorders of general nutrition of the organism and fall of temperature.

Œdema of the subcutaneous tissue in older children, as well as in adults, occurs either in the form of a general œdema of the whole body, or as a circumscribed form. The diagnosis of œdema is associated with no difficulties, being characterized by sharp signs which are peculiar only to it. An œdematous limb is in-

creased in size, the skin is tense, smooth, pale and upon pressure with the finger a dimple-like depression is obtained, which disappears quite slowly.

Question may arise only in regard to the causes of œdema.

Œdema of the whole body in children most often is due to nephritis, less commonly to weak activity of the heart; in both these events the urine contains albumen, and, besides, shows such characteristic changes as to the sediment, color and quantity, that the urinary findings render it not difficult to recognize the cause of any œdema or dropsy. This was mentioned in the section on the Semeiology of the Urine; here we only add that beginners should not lose sight of the fact that weakness of the heart leading to general dropsy is the consequence not only of lesion of the valves during the period of failure of compensation, but also of lesion of the cardiac muscles or pericardium. Hence it follows that *general dropsy of cardiac origin may set in even when the cardiac sounds are entirely clear; the diagnosis* of the cause of such dropsy *being based not so much on the presence of murmurs* occurring in connection with the first or second sound, as on *the symptoms of cardiac weakness* in general, to which symptoms belong dilatation of the heart (the transverse increase of cardiac dullness, the heart-beat being feeble, accentuated second pulmonic sound, the cardiac sounds being in general feeble, and especially those of the aorta; enlargement of the liver (because of passive hyperæmia); feeble pulse and stagnant urine.

But further than this, in childhood we occasionally meet with cases of œdema of the whole body *without albumen in the urine.* Such dropsies depend upon alterations of the capillary walls under the influence of general exhaustion, due, for instance, to diarrhœa, an old malarial fever or some other chronic diseases (general dropsy in such cases seldom occurs, much oftener there is œdema of the feet and dropsy of the abdomen), or under the influence of scarlet fever, or exposure to cold. General dropsy without albuminuria is seen so rarely that some physicians even doubt its existence; therefore, as examples, we here describe two cases which were under our observation in the clinic during 1891-2:—

U. D., a male, five years of age, entered the clinic on ac-

count of fever, cough, *œdema of the whole body and abdominal dropsy*.

History:—He was the fourth child of healthy parents. During the first year, despite being fed by the breast, he often had diarrhœa. He began to walk when about one year old. Three weeks before entrance to the clinic diarrhœa appeared, accompanied by fever and vomiting; a week later this was also complicated by cough, and two days after entrance œdema of the feet and of the whole body appeared. The present condition:—Considerable œdema of the whole body, not excluding the face, the circumference of the abdomen being fifty-five and a-half centimeters (instead of forty to forty-five as it would be normally). Upon palpation a distinct fluctuation is obtained. The skin and the mucous membranes are pale, epidermis does not scale; the appetite is poor, the thirst increased. The patient *moves the bowels eight or ten times during twenty-four hours*, the stools being bloody-mucous, watery, with abdominal pain and straining. The urine passes about three times in twenty-four hours, the quantity being 300 cub. cm. (a part of the urine is lost with the dejections), and contained, in the beginning, traces of albumen, but the latter soon disappeared altogether; *the urine being clear, without a sediment*. The respiration is quickened to about forty-eight per minute, with quite a severe cough. The examination of the chest proved negative, the heart sounds, clear; the number of beats, 132, the pulse of small tension. Sleep poor. The patient is very weak, so that he cannot sit.

The treatment: Milk diet, ol. ricini, injections of tannin and internally caffein citrate up to gr. x pro die. From the very first days, according to the abatement of the diarrhœa, the general condition rapidly began to improve, the quantity of the urine increased up to 1,000 c. c. and more, the dropsy gradually disappeared, and on the eleventh of November (after ten days) the patient left the clinic in a healthy condition.

The dropsy seemingly depended in this case upon the general exhaustion which was due to a febrile condition and bloody diarrhœa and partly to the weakened activity of the heart.

K. T., female, four years old, entered the clinic February 11, 1893, on account of the small quantity of urine, fever, œdema of the cellular tissue of the whole body and dropsy. Previously

always in good health. She became ill about two weeks before with fever and spotted angina, but recovered after about four days; while the complaints on account of which she now enters the clinic, appeared only yesterday. The appetite is rather poor, the bowels move regularly once or twice in twenty-four hours, the dejecta being normal. The quantity of urine is totally 200 c. c., but it is entirely clear, and does not contain even traces of albumen. The circumference of the abdomen is 56 cm.; the number of respirations—48; no cough; the pulse, 120, of small tension, regular; the boundaries of the heart and its sounds are normal; the sleep is good; the temperature, 37.6 degrees C. (99.6 degrees F.) in the morning, and 38.2 degrees C. (100.7 degrees F.).

The treatment. Milk diet and caffein citrate (gr. x) pro die. Within four days a considerable amelioration was noticed; the urine about 900 c. c.; the circumference of the abdomen, 52; the œdema much less; a moderate fever from 37.5 degrees to 38.6 degrees C. (101.3 to 101.4 degrees F.) lasted up to the sixth day.

The cause of the dropsy in this case was not entirely clear. It is very probable that spotted angina was a manifestation of anomalous scarlet fever, and the dropsy was the consequence of this disease. Fever does not controvert such a proposition, as scarlatinal dropsy without nephritis occurs in the acute as well as the subacute form, of which the former is accompanied by fever and quick development of dropsy (as in our case), while in the latter form the œdema, after having started with the feet and the face, spreads slowly with a normal temperature. Those not agreeing with this explanation may suppose, in the given case, an entirely idiopathic form, the so-called dropsy due to cold.

Local, circumscribed œdemata, unless they depend upon the above-mentioned diseases, may be due to varying causes.

Œdema of the feet occurs in children most often during chronic diarrhœa; *acute œdema of the face,* especially of the eyelids, usually accompanies inflammatory processes of the skin, namely erysipelas, acute eczema and urticaria; *œdema* of the *eyelids* alone leads to the proposition of inflammatory processes in the eye, especially blenorrhœa.

Unilateral, acute œdematous tumor of the face, which develops together with fever, but without redness of the skin, may depend upon parulis (alveolar abscess) or upon inflammation of the parotid gland. If the œdematous tumor of the cheek appears in a patient exhausted by some infectious disease and is accompanied by a marked fœtor from the mouth, then the patient positively has either some very pronounced stomacace, or noma.

Chronic œdema of the face or of one of the limbs in small children is often the consequence of a previous erysipelas of these parts.

An œdematous *tumor* of the neck and submaxillary *cellular tissue* on one or both sides, painless, while the integument is normal, always depends upon inflammation of adjacent organs. Upon close examination the patient will be found to have either periostitis of the inferior maxilla, diphtheria of the throat, retropharyngeal or tonsillar abscess, or mumps. Œdema of the neck in diphtheria is usually bilateral and has a very unfavorable prognostic meaning; it rapidly spreads downwards along the neck, but seldom has time to reach the clavicles, for death usually occurs within two or three days after the appearance of the œdema; on the contrary, in the case of an abscess in the throat the œdema is circumscribed and unilateral. In scarlatinal diphtheria swelling of the neck is also frequently observed, which however, is not œdematous, but solid because of phlegmon.

In periostitis maxillaris it is easy to detect, upon palpating the inferior maxilla, a circumscribed, very painful thickening of the skin.

In mumps (epidemic periparotitis) the œdematous swelling comprises not only the upper portion of the lateral surface of the neck, but necessarily spreads also to the corresponding side of the face. It is characteristic of mumps that immediately under the ear, behind the ascending branch of the lower maxilla, one can always palpate a more solid area, which is painful upon pressure and corresponds to the inferior portion of the swollen parotid gland.

In reference to the distinction of parotitis from inflammation of the lymphatic glands, as well as of œdema of the neck, in submaxillitis, see the section of Semeiology of Fever.

Œdema of one side of the chest with distinct symptoms of

pleuritic exudation denotes the purulent character of the latter.

In some, indeed rare, cases circumscribed œdemata depend upon affection of nerves—*neuropathic œdemata.* They are characterized by sudden onset and equally rapid disappearance after a few minutes or hours. Such a variability of the symptoms, together with the sharp boundaries of the œdema and the surrounding red areola makes it very similar to œdemata caused by urticaria, but the absence of pruritus excludes this connection. The fingers, wrists and cheeks are the more common situations of neuropathic œdemata, on which parts it usually appears symmetrically. In one of my cases I observed a decidedly limited œdematous tumor of the right side of the forehead, which resembled in its form a bloody tumor of the skull following a contusion. After a short time the tumor disappeared leaving no trace, but the next day it reappeared on the lids of the right eye.

That vasomotor œdema may be very widely spread is proven by the case of Kriger.* The patient, as he claimed, had been affected since childhood by œdemata which would appear rapidly and then disappear within two or three days. These œdemata traveled from one place to another and were everywhere, on the arms, legs, trunk, head and face, coming on once in two or three months. It is interesting to learn that the same disease was discovered in his mother and aunt (on the mother's side). This patient died at the age of twenty-five years during one of the attacks of asphyxia caused by œdema of the larynx. The necropsy did not reveal the cause of œdema.

To the same class of neuropathic œdemata belong cases described by Joseph,** Widovitz,*** Gevaert**** and others. We briefly mention these cases as they give a good idea of the diversity of forms of neuropathic or angioneurotic œdema.

In Joseph's case there appeared, in a five-year-old boy, a limited œdema in the form of small, separate, bluish, slightly-itching elevations on the face and arms; this took place each time after walking in the cold air. For the disappearance of the

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*"*Medic Obozr.*" Vol. XXXII, p. 385.
**_Allg. Wiener Medic. Zeit._ 1889, N. 48.
***_Jahrb. F. Kinderh._ XXIX. S. 388.
****"*Medic. Obozr.*" 1894, No. 22.

œdema it was only necessary for him to remain in-doors. Simultaneously with the œdema abdominal pain appeared. Following prolonged exposure to cold, and in addition to the circumscribed œdemata and abdominal pain, hæmoglobinuria would also appear in the child. It is remarkable that the same was noticed in the eight-year-old cousin of the patient.

In two cases of Widovitz, in males, eight and six years respectively, sharply limited œdemata of the fingers and cheeks would appear after the action of cold weather. In the younger child the swollen parts would itch (urticaria œdematosa of Milton). The œdematous parts appeared bluish-red. From the ordinary swelling which is observed on the face and fingers of every person suffering from the prolonged effect of severe cold, this œdema differed, first, by the fact that a dimple would remain after pressure with the finger; second, that the œdema was sharply limited from the surrounding normal tissues; and, third, that the swelling was disproportionally large.

In the third case of Widovitz, in a seven-year-old girl, the same œdemata of the hands and face appeared from entirely unknown causes.

The case of Gevaert was of a girl aged three years. Almost every two weeks in this patient's history, immediately upon awakening, a voluminous tumor appeared on the left side of the neck. Its size was that of a child's fist; it was hard, painless, did not itch; the skin was normal. The tumor would gradually disappear within two or three hours. When the child became sick with whooping-cough, the tumor then appeared every morning, and when the whooping-cough was over the tumor returned to its former behavior of appearing every two weeks.

One must also mention that local œdemata may depend upon stasis of the blood because of thrombosis and compression of the veins.

[The many varieties of dropsies, or œdemata, in childhood, and their characters, ætiology and clinical expressions is very completely pointed out by Fairbanks in an exhaustive article in which he mentions about 168 cases of essential "dropsies in childhood." The œdema was not accompanied by albuminuria, neither was there any evidence of organic disease of kidneys; there was

also absent every clinical or post mortem evidence of organic disease of the heart or kidneys.*—EARLE.]

A soft tumor of the subcutaneous cellular tissue of the neck, chest and other parts, easily yielding to pressure with the finger and covered with a normal pale skin, in a word, a tumor very similar at first glance to an œdematous one, may depend upon the accumulation of air in the subcutaneous cellular tissue—*emphysema subcutanea.* It is not difficult to recognize the same from the highly characteristic crackling upon pressure on the tumor resembling the crackling of dry snow.

Emphysema of the skin and subcutaneous cellular tissue most often appears on the neck, and from thence it may spread in one direction to the face, on the other to the chest and below. The most usual cause of subcutaneous emphysema in children is rupture of the pulmonary vesicles during violent cough (whooping-cough, foreign body in the bronchi, capillary bronchitis) or during crying, vomiting and hard straining. In all such cases the air, leaving the pulmonary vesicles, enters the interalveolar connective tissue at the root of the lungs and thence passes through the anterior mediatstinum to the subcutaneous cellular tissue of the neck.

In other cases, subcutaneous emphysema of the neck develops from a tracheotomy wound; in fractures of the nasal bones it may be limited to the nose and neighboring portions of the face (eyelids, forehead, cheeks); in fracture of the ribs emphysema may appear, primarily, on the chest.

[To the general œdemata must also be referred *mucous œdema of the skin* or *myxœdema.* This disease is characterized by an œdematous condition of the skin, which *never pits* and appears hard, dry, rough and glossy; the *thyroid* gland is always either entirely absent or considerably atrophied. The disease is associated with a considerable mental debility bordering upon idiocy and is called, therefore, "myxœdematous idiocy," or "sporadic cretinism." The treatment gives good results; it consists in administering internally the extract of the thyroid gland. Rosa Engelmann classifies the symptoms of this disease in the following manner:

*Fairbanks: The "Idiopathic" or "Essential" Dropsies of Chi dhood. (*Amer. Jour. of Med. Sci.*, 1903. September, pp. 443-463.)

(1) Absence of, atrophy, or disease of the thyroid gland.

(2) Mental torpidity and physical backwardness.

(3) Weak musculature.

(4) Paleness, puffiness, and dryness of the skin; later, a thickening and inelasticity of the underlying tissue.

(5) Abdominal distension.

(6) Umbilical hernia.

(7) Constipation.

(8) Rudimentary dentition.

(9) Brachycephalic skull and a general skeletal arrest, more marked in the long bones. The process is a slow, lineal, symmetric delay of ossification.

(10-11) Radiographic verifications of the fact, showing also absence of, partial or backward evolution of the small bones of the hands.

(12) Presence of Koplik's stigma of degeneration, viz., excessive prominence of and over the pisiform bone, separating the wrist-crease from the antithenar eminence.

(13) Progressive anæmia.

(14) Small heart, slow, almost impalpable pulse, cold, mottled surface, subnormal temperature.

(15) Suprascapular, supraclavicular and other connective tissue or colloid pads.

(16) Hoarse, low pitched cry and voice.

(17) Standing on a broadened base; Romberg's sign; sluggish gait*.—Earle.]

Jour. Am. Med. Assoc., Febr. 14, 1903.

CHRONIC GENERAL AFEBRILE DISEASES WITH VARIOUS LOCAL MANIFESTATIONS.

SCROFULOSIS.

The general malnutrition known under the name of scrofula —scrofulosis—is marked by an inclination to chronic inflammations of different tissues and organs under the influence of the most insignificant or inappreciable irritations. Scrofulous inflammatory processes are further distinguished by the fact that the neighboring lymphatic glands (vasa afferentia which arise in the inflammatory regions) are very easily involved and remain enlarged for a long time even after the resolution of the inflammation which gave rise to their hyperplasia.

Among the peculiarities of scrofulous inflammation of parenchymatous organs, it should be pointed out that the inflammatory products are very unstable and, accumulating in some organs, they easily undergo caseous degeneration and an actual tuberculization, with the appearance of Koch's bacilli—local tuberculosis. The frequent complication of scrofulosis with tuberculosis (local and general), of course does not prove the identity of these processes, which is evident from the fact that not every bacillar-like inflammation occurs with the presence of bacilli, and that many scrofulous patients in time recover entirely and happily reach advanced age, while tuberculous patients soon die.

Scrofulosis affords only a soil which is favorable to the development of tubercle bacilli, as we see physiologically in guinea-pigs and rabbits.

In many cases one may recognize a scrofulous person even in that period of the disease when he does not exhibit any of the chronic inflammatory processes peculiar to scrofulosis, namely, from the general countenance of the patient.

Two clinical varieties of scrofula are defined: The torpid and eretic forms (*scrofulosis torpida and eretica, s. florida*).

In the former we find the puffy, pale face; thick upper lip; light hair; large belly, quite well-developed, but flabby subcutaneous fat; the integument being pale and the muscles soft. Such children are usually apathetic and lazy. They are extremely inclined to swelling of the cervical glands and to chronic tubercular processes, local (in the glands or bones), as well as general.

As representatives of eretic scrofula we have the skinny children, with silky, usually dark, hair; long eye-lashes, with large, dark-brown eyes and bluish sclera; their subcutaneous cellular tissue is very poor with fat, while the skin is tender and in many parts, especially on the temples, is covered with transparent veins. The long bones are sometimes remarkably thin; the muscles are feebly developed; in a word, the whole organism bears the marks of tenderness and delicacy. Such children are exceptional in their great activity and nervousness; mentally they develop quickly and early. Their external lymphatic glands become but little affected, not so, however, with the bronchial. The predisposition of such children to chronic local tuberculosis may not be so great as to the acute miliary variety in the form of meningitis.

Of course, between these two extreme types, exist all possible *transitory* forms, so that it is not always possible to place any individual case of scrofula into this or that category. In many cases the diagnosis of scrofula may be established only in consideration of these, or other, manifestations, the question is generally decided, however, by a grouping of several symptoms simultaneously—a symptom-complex.

The most frequent, and sometimes the only manifestation of scrofula is *enlarged lymphatic glands*, especially the cervical. There is either only a chronic hyperplasia, or a caseous degeneration also. In the former instance, there may be palpated, along the free margin of the sterno-cleido-mastoid muscle, as well as under the horizontal ramus of the inferior maxilla, indolent, oval, solid formations, the size of a hazelnut to that of a walnut. Where there is caseous degeneration, then separate glands reach a much larger size, possess greater solidity, and, coalescing with neighboring glands form large, irregular conglomerations disfiguring the neck.

Besides the glands other tissues and parts become affected in scrofulosis: The skin (an obstinate eczema, impetigo, ecthyma, but not psoriasis); the eyes (blepharitis, keratitis and conjunctivitis phlyctenulosa, etc.); the ears (otitis media and externa); mucous membranes (rhinitis, ozæna, repeated bronchites, inclination to constipation or diarrhœa, (in the former the cause is, perhaps, weakness of the intestinal musculature, because habitual constipation usually occurs in the *eretic* form of scrofulosis in which the muscular system is generally affected by great weakness); finally, the bones (periostitis of the long bones, caries of the vertebral column and other small bones, especially metatarsal, and of the fingers in the form of spina ventosa), as well as the articulations (synovitis chronica—tumor albus).

To the peculiarities of scrofula, one may also add its tendency to spontaneous healing at the period of puberty, unless pronounced local changes have taken place in the organism in consequence of a complication with tuberculosis.

The diagnosis of scrofulosis is ordinarily not surrounded by any difficulties, being based upon the general countenance of the patient as well as the various manifestations of the disease mentioned above.

In false and true leukæmia chronic painful swelling of the glands is also noted, but in scrofula this is never so universal and so decidedly pronounced as in leukæmia. In the latter affection we also have the progressive course of the disease, considerable pallor and especially *tumor of the spleen;* in true leukæmia we also find increase of the number of the white blood corpuscles.

A pronounced resemblance to scrofula is likewise presented by cases of *late hereditary syphilis,* broadly considered. (Under late hereditary syphilis—lues hereditaria tarda—from the strict point of view are understood those cases in which the inherited syphilis remains latent during the first year of life, and then, sometimes many years afterwards, it suddenly manifests itself in the so-called tertiary forms, that is, in the form of ulcers, gummata, periostites, etc., yet by the same symptoms it may also sometimes appear as a common hereditary syphilis, that is, one which becomes evident during the first months of life, and later

on remains latent for a period, so that the difference between these two forms of late syphilis lies only in the history.)

The symptomatic resemblance between hereditary syphilis and scrofula may be very great, inasmuch as in both cases we may have chronic hyperplasia of the lymphatic glands, persistent snuffles, keratitis and affection of the bones.

The diagnosis rests partly on the character of the symptoms, partly on the history. The latter must determine whether there previously had been some manifestations of specific infection in the child, especially during the first months of life (see Inherited Syphilis); whether the mother had suffered abortions; and the condition of health in other children and in the parents themselves. One must, however, point out that the existence of an old syphilis in one parent does not yet prove that the children have the same; it only justifies a suspicion.

As a matter of fact, if the parents were infected many years before and seem to have been cured, then their old infection may often be the cause of rachitis or scrofulosis in their children. Such an ætiology must be borne in mind in all cases where symptoms of marked scrofula (affection of the bones) appear in a child born of apparently healthy and robust parents, who was breast-fed and, in general, had been reared in a good hygienic environment.

Of separate symptoms which contraindicate scrofula and are in favor of syphilis, one may name the following:—

(1) Parenchymatous keratitis (this symptom is of decided importance, occurring in pure scrofula very rarely); while on the contrary for scrofula and against specific infection, there are blepharitis, keratitis phlyctenulosa and conjunctivitis.

(2) Chronic ulcerous rhinitis with destruction of the nasal septum (in scrofula there is only a mere vegetation of the mucous membrane of the conchæ, or its atrophy with stench from the nose, as in ozæna).

(3) Periostitis of the bones of the legs. (In scrofulosis, fungous synovites and osteomyelitis of the small spongy bones as well as spina ventosa.) In view of the symptoms and history inherited syphilis may be suspected, then a final decision is to be derived from the results of specific treatment.

(4) Ulcerous processes in the throat with the destruction of the soft, and sometimes even of the hard, palate. (In scrofula it does not go farther than chronic sore-throat with hypertrophy of the tonsils and adenoid vegetations in the naso-pharyngeal cavity).

(5) Gummata and gummous ulcers with sharply-cut edges. In scrofula there sometimes arise peculiar gummata in the form of nodes in the subcutaneous cellular tissue, which are characteristic in children one to three years of age and known under the name of scrofulophytus, s. nodus scrofulosorum (nodes of scrofulous persons). The favorite locations of these nodes are the buttocks, thighs and cheeks. There first appears under the skin a round, movable nodule, which increases gradually up to the size of a hazel- or walnut; it is not diffused, but is easily felt during palpation. The skin covering the nodes is first of normal tint, but later on the node adheres to the skin, which then becomes red. In the further course either resolution sets in (absorption of the infiltration), or the chronic inflammatory process, which caused the formation of the node, terminates in suppuration, i. e., a small abscess results, which usually opens exteriorly and soon heals or leaves an ulcer with corroded edges (but not thick ones, as after the opening of a gumma).

It is sometimes very difficult in small children to distinguish scrofulosis from the consequence of rachitis, because the general malnutrition, which constitutes the foundation of rachitis, manifests itself as well in scrofula by an inclination to chronic inflammatory processes of various tissues and organs under the influence of indefinite or imperceptible irritations.

RACHITIS.

Rachitis belongs to diseases of the first two or three years of life. It is easily recognizable from the peculiar alteration of the bones, by which it differs from scrofula. However, as in rachitis the disease is not confined to the skeleton alone, but also involves all other parts, and as we here also often observe chronic eczema, as well as hyperplasia of the glands with their caseous degeneration, together with catarrhs of the mucous membranes; and as, besides this, rachitis also exhibits in regard to the ætiology much

that is common to scrofulosis, it is therefore very hard to say in each separate case, what condition we have, whether rachitis only, or a complication with scrofula. I entirely agree with Cantani that the causes and essence of both these diseases may be identical (according to Cantani—lack of assimilation of lime by the organism),* while the difference may be explained by the age of the patients; during the first two years of life the deficiency of lime mostly affects the bones, but later on the changes of the bones are of secondary importance.

Whatever it may be, it is true that rachitis, without symptoms of scrofula, seldom occurs and that a child having been previously—during the first years of life—a rachitic one almost always suffers later on with scrofula. Thus if we find rachitic changes in the bones of a patient, and simultaneously chronic rashes, hyperplasia of the glands, etc., then simple rachitis may be diagnosed, still we cannot say that at some future time the child will not, perhaps, become scrofulous.

Rachitic changes of the bones consist, partly, in their softening (absorption of the already deposited lime); on the other part in the thickening of the epiphyseal ends because of an increased vegetation of osteoid tissue at the point of the transformation of the bone into cartilage.

First of all, during the first months of life, rachitis shows itself by the softening of the occiput (cranio-tabes); somewhat later one can detect thickening of the frontal and parietal protuberances, so that the oval form of the head becomes somewhat square-shaped. (Regarding the importance of the size of the fontanelle in the diagnosis of rachitis see page 41.) During the very first year of life the rachitic process also spreads over the ribs; at the place of the transformation of the bones into cartilage a thickening appears, which is readily appreciated by palpating. (One need only, for this purpose, pass the finger over any rib, in

*Rachitis and scrofula, says Cantani (*Specielle Pathol. and Therapie der Stoffwechselerkr,* B. IV., 1884) are closely related; if there is great lack of lime, then the bones become affected; if the lack of lime is small, then the growing bones attract its whole reserve, so that only other parts suffer in such a case. The flabbiness of the tissues and unsteadiness of the cellular elements in scrofulosis, according to Cantani, partly depend upon the insufficient deposit of lime in the soft parts, because albumen cannot form a healthy and resistent cell, of which the necessary constituents are, among others, lime salts.

a direction from the axillary line to the sternal bone.) In thin persons these thickenings arise under the skin in the form of spherical formations, which lie upon each other along a curved line, which passes from above downwards, gradually receding from the median line. The general aspect of these thickenings justifies the name—*rosary-like thickening of the ribs.*

The softening of the ribs is manifested by their losing the normal curvature and assuming a more straight direction, so that the chest appears more or less compressed laterally, and the sternal bone juts forward, as occurs in birds, hence is the name "*pigeon breast*" (pectus carinatum). (See Fig. 6.)

Owing to habitual meteorism in rachitis the whole abdomen becomes distended, and likewise the lower portion of the chest (below the points of the insertion of the diaphragm); therefore, around the whole periphery of the chest there appears something like a groove (waist-line—rachitic girdle), which divides the upper, narrowed portion of the chest from the lower, dilated section; this groove corresponding to the points of insertion of the diaphragm.

In the long bones the rachitic thickenings are most noticeable on the lower ends of the forearm. Softening of the bones of the extremities manifests itself by their becoming curved, especially the legs.

Because of muscular weakness in general, and of the back especially, rachitic patients cannot assume an erect posture; on the contrary, obeying the laws of gravity, they so bend the body that the vertebral column forms a wide arch with convexity backwards. In the beginning it is easy to remove the curvature of the vertebral column, for instance, by the recumbent posture of the patient on the back or upon lifting him by the arms (arm-pits), but later on the deformity becomes constant and a *rachitic curvature* is formed, which differs from Pott's curvature (due to caries of the spine) by being not angular, but bow-shaped. (See Fig. 49.)

The above are the chief changes in the bones, by an understanding of which the diagnosis of rachitis, in typical cases, will be relieved of any difficulties.

It is another thing entirely to recognize a *beginning rachitis*

when the changes in the bones have not had time to develop. In such cases it is first of all necessary to know the character of the food of the child, and the nature of his environment. Food which does not correspond to the child's age, and the bad air of rooms, are of such consequence, in the ætiology of rachitis, that in many cases its approach may be foretold long before the first symptoms are manifested. With more certainty may this be done in all cases where the child has been given, from the first months of life, an additional food consisting of starch or sugar (Switzerland milk), and especially if he at the same time lives in a suffocating air or in a damp dwelling. Further, one may expect the development of rachitis in the near future, if, from the first months of life, the child has suffered from chronic dyspepsia, no matter whether breast- or bottle-fed. Seldom do those children who become fat because of over-feeding, even by the best food, remain free from rachitis.

The beginning of rachitis itself occurs very gradually:—the child becomes pale; the skin and the muscles are flabby; he sleeps poorly; his head is prone to sweat and he often rubs his head on the pillow, which causes *baldness of the occiput.* These symptoms are peculiar of children from three to five months of age, in whom, about this time, we may usually be successful in finding softening of the occiput in greater or less degree.

Under the influence of treatment and removal of the causes the disease may stop in this initial period, all indications subsiding within a few weeks, and the child gain full recovery. In less favorable cases there appear, on the contrary, some other rachitic changes in the form of enlargement of the frontal and occipital protuberances, thickening of the ends of the ribs, etc.

If rachitis begins during the second half of the first year, then softening of the occiput is absent, and, as initial symptoms, we have pallor, irritability and, further, retarded dentition or increase of the intervals between the groups of teeth, as well as affection of the ribs. If rachitis sets in still later, for instance, at the end of the second year of life, then the chest also may remain normal, the limbs being chiefly affected. As not all bones are involved in rachitic changes at the same time, a certain regularity and degree of successiveness being observed, one

may, from the existing changes, judge approximately when the disease began.

We have already stated that bone changes constitute the chief, and the most characteristic, symptoms of rachitis; but, in addition to this, the malnutrition also influences other tissues and organs, in consequence of which, symptoms appear which are important, not so much for the establishment of the diagnosis of rachitis, as for the therapy and in connection with determining whether the morbid process progresses or whether amelioration is taking place.

To the most constant symptoms of rachitis belongs the following:—*The digestive organs* in a rachitic patient very rarely continue to perform their functions properly, but rather there is usually either some inclination to diarrhœa, or else to constipation, and in either event to chronic meteorism. The large, so-called "frog abdomen" of the rachitic child depends upon different causes, as, abundant formation of gases because of improper digestion, weakness of the musculature of the bowels and abdominal wall, enlargement of the spleen and liver and compression of the chest.

On the part of the *respiratory organs* great inclination to chronic or often repeated catarrhs of the respiratory passages and catarrhal pneumonias are noted, so that the rachitic patient poorly withstands whooping-cough and measles. Under the influence of constant catarrhs, the bronchial glands also become affected, often undergoing caseous degeneration and tuberculization, hence the disposition of the rachitic to tubercular meningitis.

The abnormal nutrition of the *nervous system* manifests itself by poor sleep and disposition of the rachitics to laryngismus stridulus and eclampsia.

On the skin chronic eczema often occurs and, under the influence of perspiration, miliaria.

Malnutrition in general is denoted by the pallor of the skin and mucous membranes, flabbiness of the muscles and by more or less swelling of the spleen.

In each individual case all these symptoms, of course, will not be present; the expressions of the disease depend largely on the individuality of the patient and on the degree of development

of the disease, but this does not justify us in looking upon them as complications.

The diagnosis of rachitis is based especially on the characteristic changes of the bones, and is generally not difficult.

Thickening of the epiphyses with the wasting of the organism, paleness of the integument, and spleen tumor are sometimes observed in hereditary syphilis, but in such a case there are always present other syphilitic symptoms on the skin or mucous membranes of the nose, mouth and throat which confirm the disease (see Syphilis); and besides this, epiphyseal syphilis occurs very early, that is, during the first months of life, while rachitis of the limbs is peculiar to children in the second year of life. The bones of the skull in syphilis do not become affected, and if open sutures, softened occiput or thickening of the frontal and parietal prominences are observed in a syphilitic child, then it means that syphilis in the given case is complicated with rachitis; this occurring very frequently.

There are cases of rachitis in which, notwithstanding the insignificant affection of the bones, the child exhibits symptoms of very pronounced anæmia, the spleen being very large and solid, so that the question of leukæmia, complicated with rachitis, arises. The point may be decided through a microscopical examination of the blood: the blood in rachitis, when this occurs with large spleen and pronounced anæmia, is pale at the first glance, but the microscope shows that the number of white blood corpuscles is not increased, or if so, then very little.

[Abt* found that in the United States, Italian and negro children show the greatest proclivity to the disease, due doubtless to the decided change of environment from a semi-tropical to a north temperate climate.

Poor hygenic surroundings, coupled with unsuitable and insufficient food, are highly favorable to the production of rickets. Artificial feeding of poorly-prepared foods plays an important rôle. Diseases which occur during the early period of life and which cause disturbances of nutrition also predispose to it. Examination of the blood in rachitic children shows that a large proportion of the cases present anæmic states, and that where there

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is glandular enlargement in addition to the anæmia, leucocytosis is usually found.—EARLE.]

HEREDITARY SYPHILIS.

The more recent the syphilis is, in both or one parent, the severer it affects the offspring (excluding only cases when the mother is affected during pregnancy; then the child very often remains healthy). In the most severe cases pregnancy does not continue to the end, but terminates in abortion or in still-birth; and here the fœtus manifests undoubted evidences of syphilis. Syphilitic children are usually shortlived, dying during the first days or weeks after birth.

If the child is born at full term and seemingly healthy, it becomes sooner or later syphilitic, dependent on the period of the disease in the parents.

The first symptoms of syphilis occur in the child usually during the first weeks after birth, seldom from six to twelve weeks and almost never after three months. The majority of authors agree that the first appearance of hereditary syphilis may occur even many years after birth of the child, and in such cases the disease makes itself evident directly by symptoms of the tertiary stage (periostitis, gummous ulcers, etc.). This is the so-called *syphilis congenita tarda* in the strict sense of the word. But the symptoms during the first weeks of life being often developed indistinctly may be overlooked, and therefore it is possible that the majority of cases of late syphilis are nothing but relapses of the common hereditary type. Whatever it may be, it is true, that, with very few exceptions, *hereditary syphilis manifests itself in the first three months of the child's life.*

In the majority of cases the disease begins with *snuffles* and the diagnosis of syphilis becomes very probable if the snuffles be protracted and if simultaneously a peculiar *yellowish paleness of the face and pigmentation* or *seborrhœa of the brows* is noted.*

*The important diagnostic meaning of the color of the face in syphilitic patients was pointed out especially by Trousseau (*Clinical Lectures*, t. II., p. 822): "An experienced physician," says he, "will recognize syphilis in the first glance at the child's face. The face is of a peculiar dark-brown tint, as if the face of the child, it seems, was smeared with a 'coffee-ground' mass. This is not paleness, neither yellowness, nor straw yellow color, which is met with in some other cachexiæ. This color does not spread at all on the other parts of the body. I do not know any other disease of

If in addition to these apparently insignificant symptoms, there are still some anamnestic data, then the diagnosis of hereditary syphilis may be held as proven. At any rate the physician need not hesitate long, because very soon there appears some other more certain syphilitic symptoms, namely, *macular* and *papular eruptions,* spread all over the body, but mostly on the lower limbs, in the folds of the neck, groins and circa anum there may be noted large mucous patches (papulæ madidantes), which are very characteristic and may therefore give a positive conclusion regarding the presence of syphilis in any given case. On the lips and in the corners of the mouth there appear fissures and more or less diffuse infiltrates (the throat in small children usually does not become affected, but in relapses of hereditary syphilis it does very often). Further, among the changes peculiar to syphilis may be mentioned *smooth, glossy, as if polished, soles,* blebs of pemphigus on different parts of the body, especially on the palms and fingers. Subcutaneous lymphatic glands usually do not become swollen in inherited syphilis, excluding those which are situated near suppurative places.

About false syphilitic paralysis due to syphilitic osteo-chondritis, see the section on paralysis (p. 388).

Late hereditary syphilis—syphilis hereditaria tarda—occurs either as a relapse of an old syphilis, or without any preceding symptoms, and it is characterized by symptoms of the tertiary period. Similar symptoms may appear at the age of three, but more often they are observed after the age of five and up to twelve. In some cases symptoms of late hereditary syphilis develop undoubtedly much later—for instance, between the ages of twenty and thirty years.

The symptoms of late hereditary syphilis are manifold enough, but in many cases they are not plainly characteristic, so that the diagnosis of syphilis may be made on the ground of these symptoms only with the aid of the anamnesis which must establish the presence of the disease in the family. With this purpose it is important to get data regarding the following three

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children, where such a color should be noted, and if well developed, is most characteristic." Miller, however, does not hold the color of the face as an important symptom, because he saw it also in septicæmia of the newborn.

points: (1) Are there symptoms of syphilis on the part of one of the parents? (2) Were there cases of syphilis in the brothers or sisters of the patient? (3) Is there noted in the family of the patient great mortality of the children during the first year of life, and especially during the first weeks or months after birth, and at the same time without visible causes, *i. e*, from inherited weakness? Here may be included abortions and still-births, because *syphilis is the most frequent cause of abortions.* According to Fournier, from five children of a syphilitic family four succumbed because of syphilis during the first four months of life or even during pregnancy. One of the best examples of the high mortality of children because of syphilis is reported by Ribemont-Dessaignes, viz.: From a syphilitic father who did not want to undergo antisyphilitic treatment the mother was pregnant nineteen times; she bore five dead and fourteen living children, all of the latter died in the first half year of their lives.

Besides the history, the diagnosis can be assisted much by those traces which are left by syphilis in the body. Some of these are of the category of *parasyphilitic appearances,* i. e., such symptoms which occur under the influence of syphilitic virus, but cannot be held as specific ones, because, first, the same symptoms may be produced by some other cause depressing the general nutrition of the organism, and, second, these symptoms do not improve under the influence of antisyphilitic treatment; nevertheless, such symptoms are of great diagnostic value, because they are often produced by hereditary syphilis and more often than by other causes. At least, the parasyphilitic symptoms lead the physician to suspect and look for syphilis.

Other evidences of syphilis are sequelæ of old specific symptoms.

Among the parasyphilitic symptoms of hereditary syphilis we may include the following:

1. *Habitus* of the patient. Syphilis destroys the nutrition of the fœtus during its intra-uterine life, and this influence manifests itself later during many years and very differently; in one case the infant appears very feeble, morbid and strikes one with its characteristic earthy-grayish color of the face; in other cases the child appears very anæmic with a large spleen and with a waxy paleness of the skin, or it becomes rachitic; in fact, *a healthy*

appearance of the child almost excludes an inherited syphilis. Especially suspicious of hereditary syphilis is the fact that a severe anæmia or marked rachitis affects all children of a given family, notwithstanding the correct hygienic-dietetic environment and the absence of visible causes of general malnutrition of the children. It is also suspicious if several members of a family, without a tuberculous taint, die from meningitis or apparently tuberculous disease.

2. *Want of general development.* The teeth cut late, the child begins to walk late, to speak late; in the period of youth syphilitic children remain small, the hairs of the beard, under the axillæ and on the pubis begin to grow late; in boys maldevelopment of the testicles can be noted, in girls menstruation is delayed

Fig. 63—Microdentism (syphilis).

and the breasts are not fully developed. Such persons look much younger than they indeed are; they remain childish too long. Such a condition is therefore called *infantilismus.*

3. *Changes of the skull,* being characteristic of a strictly developed rachitis of the head (square-shaped head with unusually prominent parietal and frontal eminences, saddle-like skull with hollows corresponding to sagital and lambdoidal sutures; hydrocephalous skull), may be of value for the diagnosis of syphilis only in such cases where we deal with a child who, according to the anamnestic data, could not be sick with rachitis.

4. *Changes of the teeth* in syphilis are manifold; in one case we have to do with microdentism (Fig. 63); all or only the middle incisors of both or of one maxilla are abnormally small and slits remain between the teeth; in other cases the teeth are covered with faulty enamel and therefore very soon become carious and crumble or appear as if eaten away—this is the so-called *erosion of the teeth.* The erosions affect either the surface of the teeth or their free margins. Among the affections of the surface of the teeth there occur most frequently calyciform and transverse-

ly striated erosions. Their most common seats are the middle incisors, but sometimes also the canines; sometimes there is one transverse stripe like a groove (Fig. 64), sometimes there are several such stripes (Fig. 65). Changes of the margin of the teeth are met with in the incisors, as well as in the molars. There is

Fig. 64—Syphilitic teeth (explanation in the text).

very often atrophy of one-eighth or one-half of the crown, so that it seems a small supplement is added to the normal tooth. Although all mentioned changes of the teeth are held as symptoms of syphilis, yet they are not pathognomonic of syphilis altogether, because they are met with very often in other conditions; for instance, one can often see the transverse stripes in the teeth of chil-

Fig. 65—Syphilitic teeth (explanation in the text).

dren who have suffered during the first year from eclamptic convulsions. Especially characteristic of syphilis are the teeth (superior incisors) with the transverse white (not deepened) stripe (Fig. 66); and especially again the so-called *Hutchinson's teeth*, which are characterized by *the semilunar notching on the free edge of the two upper middle incisors* (Fig. 67).

Besides this essential sign of Hutchinson's teeth there are still secondary signs, viz.: the teeth have rounded corners and

differ from the lateral incisors by their smaller size; sometimes they have the shape of a turn-screw, i. e., the tooth is thicker in the neck and wider than on the top. Not infrequently they grow without parallelism to each other. All kinds of erosions and other abnormalities peculiar to syphilitic teeth are met with in the permanent teeth.

As to the remnants of old specific affections the following may be referred to:

1. *Scars*, remaining after syphilitic sores, may be characteristic by their form, for instance, when they were developed from

Fig. 66—Syphilitic teeth.

serpiginous ulcers, or when limited by scalloped margins; or by the place of their location at the corners of the mouth, circa anum, posterior surface of the thighs and breech.

2. *Patches* and *clouds of haze of the corneæ*, as a result of specific keratitis, known under different names as keratitis interstitialis, keratitis parenchymatosa diffusa, keratitis Hutchinsonii. Although the origin of this chronic keratitis is ascribed usually to malnutrition, nevertheless this condition is of great importance in the diagnosis of syphilis, because inherited syph-

Fig. 67—Hutchinson's teeth (explanation in the text).

ilis produces it incomparably more often than all other causes put together. The affection is evidenced by diffuse opacity of one or both corneæ, which *develops slowly* and mostly *without any* attacks of *irritation* notwithstanding the fact that at the height of the disease the whole cornea is congested. The morbid process lasts several months (six to eighteen) and then passes away

without leaving any traces, or else leaving more or less visible spots. Girls become affected somewhat more often than boys, the most susceptible age being from eight to fifteen years (before two years of age this form of keratitis rarely occurs). As the eye-spot may have another origin (for instance, in children because of blenorrhœa neonatorum), it is comprehensible that the spots of the cornea may be of diagnostic importance in favor of syphilis only when the history shows that the patient was suffering from a diffuse keratitis (the patient suffered from eye disease and for months was blind).

Chronic keratitis, being as we have observed very characteristic, receives still more diagnostic importance if it occurs together with the so-called syphilitic teeth and deafness. These three symptoms are known as Hutchinson's trio.

3. *Deafness* is especially indicative of inherited syphilis in such cases where it occurs without attacks of inflammation of the middle ear, i. e., without pain and pus discharge from ears.

This syphilitic deafness depending perhaps upon the affection of the labyrinth or auditory nerves, is most met with in older children or in adults, and is characterized by the following: (1) It is usually bilateral (first, one ear becomes affected, and, later, after some weeks or months, the other one); (2) the deafness appears suddenly and advances quickly; (3) is not accompanied by pain, discharge, or any other subjective symptoms; (4) the patients often complain of subjective noises and dizziness, and (5) it terminates after several weeks with a very considerable, sometimes complete, loss of hearing, which remains permanent and does not improve even in cases where early treatment is instituted.

Undoubtedly the deafness of syphilis may be of another origin, as, for instance, in small children (of several weeks or months) there occurs sometimes *suppurative syphilitic otitis*, which differs from a common otitis media in that it runs from the beginning without any pain and fever and yields to specific treatment, but left without any care it results in destruction of the membrana tympani, falling out of the ear-bones and in deafness. Although such painless, suppurative otitis is not a pathognomonic symptom of inherited syphilis, because it may occur also from some other causes, nevertheless it must be looked upon as suspicious regarding the ætiology.

4. *Changes of the bones.* Of the long bones the tibial become affected most often, being the classical locations for the appearances of late syphilis; of the spongy bones—those of the scalp. In many cases several long bones become affected simultaneously, but most often both tibial bones. They appear to be compressed at the sides and curved, while the curvature of the arc looks forward; this is the so-called "sword-like tibia." (Figs.

Fig. 68—Sward-like tibia.

68 and 69.) This form of the leg differs from a rachitic curvature in that in syphilis there is no real curvature, the disfiguration of the leg depending on the deposition of new-formed osseous substance on the anterior surface of the bone; in short, the syphilitic bone is only unilaterally thickened, the rachitic one, on the contrary, is really curved.

The thickening of the bones in syphilis is the result of a *specific periostitis.* In taking the history of the disease (anamnesis) one must remember that syphilitic periostites are in their

Fig. 69—Sward-like tibia (explanation in the text).

beginning very *painful,* that the pain appears earlier than the tumor and troubles the patient especially in the *night time*—(dolores osteocopi nocturni). Later on there appears an extreme *painfulness* of a certain point of the bone to *pressure*, and still

later, when a distinct thickening is noted the pain gradually abates and finally disappears entirely. The duration of the sickness from the moment of the appearance of the pain until the final formation of the painless hyperostoses varies between three to five months and two to four years. If, however, the bone becomes necrotic, with the subsequent formation of a sequestrum, which separates by suppuration, the disease lasts still longer.

During hereditary syphilis there appear in the bones not only periostites, but also gummata. The most frequent places for

Fig. 70—Gummata.

gummous new growths are also the anterior surfaces of the legs and the scalp. Clinically, the gummata are characterized by limited, half-spheric *swellings,* located on the bones (Fig. 70), and by *pain.* In the beginning these swellings are solid, later on they soften and fluctuate; they become adherent to the skin, which was before entirely movable on the tumor. The size of the tumors varies from a cherry-stone to a good-sized apple. The pains are in some cases very severe, in some hardly noticeable. The tumor may disappear under the influence of antisyphilitic treatment and in its

place there remains sometimes a distinct sense of pressure. If the tumor becomes soft and undergoes suppuration it opens through the skin, forming a deep ulcer with infiltrated, sharply cut, abrupt edges.

Syphilitic lesions of the bones in childhood are often held as scrofulous ones, from which they differ in many respects, namely, first, regarding *place* of occurrence: Syphilis is localized usually in the long bones, especially on the tibia, and occupies the *diaphysis,* while in scrofulosis the short bones (vertebræ, tarsal bones) and the *epiphyses* of the long bones are affected. Secondly, regarding the *anatomical essence* of the process, in syphilis we have to deal with subacute or chronic forms of periostitis producing thickening of the bone or a superficial necrosis with suppuration; in scrofulosis, however, we have caries because of the tuberculous affection of the bone. Third, regarding the *symptoms:* The syphilitic periostites are accompanied by a severe pain, increasing in the night, while scrofulo-tuberculous osteites run almost painlessly. In syphilis during several months the diseased bone becomes gradually thickened; the skin over this bone, and the subcutaneous tissue remain normal; the tumor seems to be, on palpation, entirely solid; in scrofulosis, however, the bone itself does not become hypertrophied, but a swelling arises because of infiltration and œdema of the soft parts, and therefore this tumor appears, on palpation, doughy-like. Suppurative termination occurs in syphilis much rarer than in scrofulosis; the sound introduced into the fistula strikes, in case of syphilis, against a solid bone (sequestrum); in case, however, of scrofulous caries the sound penetrates easily in the substance of the softened bone tissue.

Syphilitic affections of the bones, and especially the accompanying pains, yield to early treatment with potassium iodide, which does not act at all on the scrofulous osteitis.

The syphilitic curved leg is not difficult to be differentiated from a rachitic one. Of very great importance in such a case is the age of the patient; the curvature of the legs in rachitic patients appears at the first attempts to walk; it is in the second or third year of life; with advancing years the curvature of the legs lessens: while the seeming curvature of the tibial bones in late hereditary syphilis never appears before three years, but usually

from the fifth to the twelfth year. Furthermore, it must be borne in mind that in rachitis the leg bones are curved, but their diaphyses are not thickened, while in syphilis it is *vice versa*, the seeming curvature occurs because of a unilateral thickening of the bones.

On the *skin* late hereditary syphilis appears as *gummous syphilides* like separate or groups of solid nodules, from the size of a pin's head to a cherry stone, which nodules may later become converted into so-called gummous ulcers. Syphilitic gummata of the skin are characterized by their dark red color. Their favorable place is the face and the legs. On the face they more often affect the nose: on the legs—the anterior surface. The gummous ulcers

Fig. 71.

arising from them are characterized by solid, sharply-cut abrupt edges and an uneven, greasy floor. Such forms of an ulcerative syphilis are very similar to an ulcerative lupus, but differ from this especially by the character of the ulcers (in lupus we have neither solid, abrupt edges, nor greasy floor; on the contrary, after removal of the crusts the floor of the ulcer appears on a level with the edges, and is red and easily bleeds, the borders being

soft, undermined, sometimes movable) and by the course; although the gummous syphilide runs a slow course, yet quicker than lupus. What is produced by the former in months, is done by the latter in years.

5. *The changes in the nose* are the result of ulcerative gummous destruction first of the mucous membrane and later of the bones. The left picture shows the form of the nose after the destruction of the cartilaginous septum; the right picture—the sinking septum because of destruction of the vomer. From the history it is easy to find out that, previous to the deformity of the nose, the patient suffered from ozæna, with abundant secretion, but there was neither pain nor other symptoms which troubled the patient, and thus the physician was not consulted. (Fig. 71.)

6. *Changes of the soft and hard palate* depend also upon the gummous-ulcerative process which leads to the cicatricial shrinking of the soft palate, or to its destruction and to the perforation of the hard palate.

7. *Changes of the testicles* in inherited syphilis are of two kinds: In one case we have to do only with their maldevelopment; on the other hand with sclerosis—*sarcocele syphilitica.* In both instances the parts appear reduced in their volume, with this difference, that in the former case they are of normal consistence and with a smooth surface, in the latter case they are very solid and somewhat tuberous. Syphilitic sclerosis of the testicles occurs in all ages and is often overlooked, because it develops indolently and is not accompanied by a marked swelling of the organ even in the first stage of the disease.

We have discussed a sufficient number of symptoms on the ground of which the diagnosis of an inherited late syphilis can be established, but the influence of the disease on the organism is far from being exhausted by the above-named symptoms; the chief danger that threatens the organism suffering from hereditary syphilis consists in that the infection can produce, like an old acquired lues, serious affections of all viscera, especially of the brain and the spinal cord. Symptoms produced by it in the viscera are the same as in adults; as such, they are not peculiar enough so that it would be possible to recognize syphilis as the cause of these symptoms. The diagnosis of syphilis of the brain, liver, etc., is made on the ground of the history and of the accompany-

ing symptoms, which prove the existence of hereditary syphilis in a given person. To these accompanying symptoms we have just spoken about, we add only that the diagnosis of late syphilis, as well as of a recent one, is easier made in a majority of cases than perhaps appears, because of the fact that one can succeed in finding in a child several appearances of the disease simultaneously and in such a combination as can never be met with in any other disease.

If a nursling manifests an undoubted syphilis, the question arises if this is an hereditary or an acquired one? On the ground of the symptoms alone this point cannot always be decided, because sometimes, especially when syphilis appears late, for instance in the third month, symptoms of hereditary syphilis, namely, different kinds of eruption, may be the same as in an acquired one. Syphilitic snuffles would be in favor of the hereditary origin of the disease, as also yellowish paleness of the face, seborrhœa of the supercilliary regions, glossy soles, pemphigus and changes of the epiphyses of the bones, and against syphilis (hereditary) we regard hyperplasia of the lymphatic glands.

Of essential importance for the decision of this question is the time of the appearance of the first symptoms of syphilis, together with the anamnesis.

If the beginning of the disease occurs in the first three months of life, then the heredity of syphilis is more than probable, and the earlier it appears the more probable is it hereditary, and, *vice versa,* the nearer the end of the year the child fell sick, the more the chances are in favor of the extra-uterine infection of the child.

Regarding the history, here it is important to clear up the question, was there syphilis in either parent, and if there was, when?

Here two cases may be supposed: One of the parents contracted syphilis before the pregnancy of the mother with the given child, or the mother contracted the taint during the pregnancy. Can the child in the latter case contract the disease? This question is a disputable one. Such great authorities as Bärensprung and Kassowitz deny the possibility of communicating the syphilitic taint through the placental circulation, although theoretically this is quite possible; others, on the contrary, do not hesi-

tate in deciding the question positively and claim that the child can be born healthy only in case the mother contracted syphilis in the second half of her pregnancy.

While undobutedly true that the mother affected by syphilis in the early months of pregnancy miscarries often, or the baby is an abortive one and not viable, yet since no pathologic changes, peculiar to syphilis, are met with in post-mortems of such abortions, therefore it is impossible to assert that the fœtus in such cases dies from syphilitic affection; and again, that, if in the history there is noted that the mother contracted syphilis during pregnancy, the father being healthy, the child born at term and after a couple of months or weeks took ill from syphilis, then one may think that the child became affected not through the placental circulation, i. e., that here is not an hereditary syphilis, but one acquired during or after the confinement.

Still more difficult is it to decide the question whether the child has an inherited syphilis or an acquired one when we deal with a case of the third period of the disease in older children, an exact history being absent. In such cases one must pay attention to the habitus of the patient and to the symptoms which are especially peculiar to inherited late syphilis, as, for instance, Hutchinson's trio: keratitis, deafness and syphilitic teeth are not produced by an *acquired* syphilis. In some cases the question may be cleared up by the lack of correspondence of the symptoms to the age of the patient, as when we meet in a child of ten years of age, or a little older, fresh signs of syphilis, as for instance, roseola syphilitica, or condylomata on the mucous membranes, then we conclude that, in the given case, the disease is a recent one, acquired after birth.

If the parents were syphilitic before the conception, then another question arises, viz.: How long does the ability of syphilis to be communicated to the offspring last? The decision of this depends on the question as to whether the syphilis was left to run its natural course, or did the patient undergo a mercurial treatment?

In the former case one may say positively that the ability of communicating syphilis to the offspring begins with the moment of appearance of the first general symptoms, and lasts during several years, gradually diminishing.

This *law of the gradual voluntary decrease of the power to communicate syphilis* shows that children born of syphilitic parents become affected with the disease less readily the later they are born, the more time elapsing from the moment of the infection of the parents. In the first two or three years, for instance, are observed miscarriages, still-births or abortions; later on, notwithstanding the pregnancy reaches full term the children are born with visible signs of syphilis on the skin, usually as pemphigus, or these appear in the first days of life; in the subsequent children syphilis appears later and later and in more slight forms.

Thus, the duration of the whole period of syphilitic communication from parent to offspring lasts an average of five to twelve years, but sometimes even longer. Therefore, if a physician, dealing with a syphilitic child, can get from the clinical history information regarding the *law of gradual decrease of syphilis,* this will prove that the syphilis in a given case is an hereditary one; if, however, all older children are free from syphilis, and the last child became affected with it late, after the birth of the last child but one, and the parents did not apply the mercurial treatment, then it is probable that the affection is an acquired one (because a recent syphilis in the parents would produce a miscarriage, or, at least, the child would be an untimely one and would take sick with severe attacks of syphilis in the first days or weeks of life).

The case is entirely different if the culpable parent applied the mercurial treatment; here the law of the gradual diminution of the intensity of the disease is of no value, because the ability of communicating syphilis to the offspring yields very well to the mercurial treatment and, therefore, even the first child, conceived soon after the occurrence of general syphilis in the parents (the patient having applied mercurial treatment) can be born either entirely healthy or becomes infected with syphilis late and but slightly.

The ability of communicating syphilis to the offspring must be looked upon as one of the signs of general syphilis, differing from other sypmtoms, first, by the constancy, i. e., it lasts even in the latent period of the disease, all other symptoms being absent; and, second, by the independence, i. e., this symptom disappears, while the other symptoms continue, so that the birth of

healthy children does not prove at all that the parents recovered from their syphilis entirely.

The similarity of this symptom to the others consists not only in that it improves under the influence of treatment, but also that it is liable to relapse, so that one or more healthy children may be suddenly followed by abortions or by syphilitic children. Thus, it is necessary to inquire into the health of the parents, not for the time shortly before the birth of the given child, but at least for ten to twelve years previously. The good health of the older children may appear against an inherited syphilis in the last child only if the parents did not undergo a mercurial therapy, and since the last but one confinement there elapsed not more than two or three years.

FEBRILE DISEASES OF CHILDREN.

If the temperature of the patient taken in the axilla is more than 99.5 degrees F. it means that the patient has fever, but no other conclusion can be drawn from this except that the patient is unwell. The degree of elevation of the temperature does not indicate by itself the trouble, and, if guided only by the thermometer, one cannot judge even if the child is dangerously sick or not, because there are many mild diseases of short duration which start in children with high fever, and, *vice versa,* a moderate fever occurs in the beginning of very serious diseases, as, for instance, in tubercular meningitis, diphtheria, etc.

Nevertheless, we hold the measurement of temperature as a very important help in the diagnosis, as well as in the prognosis, provided it be taken regularly, at least twice a day, and the results obtained are appreciated, together with other sypmtoms. It is not always possible to find out the cause of the fever in the beginning, because not every disease can be recognized on the very first day; in some diseases, however, the diagnosis does not exhibit any difficulties.

The first question that is to be decided in every case of fever is the following:—Does the elevation of the temperature in any given case depend on some local disorder, or upon a general disease, as typhoid, scarlet fever, etc.

It is self-evident that we can decide such a question only through the minutest objective examination of the patient; then we may detect, perhaps, some local lesion which can explain the cause of the fever, or we may be able to prove that we have to deal, in a given case, not with a local, but with a general disease of the organism.

Proceeding to the examination of a patient suffering from fever, we must first of all undress him and inspect the whole surface of the body. In many cases this suffices to discover the cause of fever, even on the first day of the disease. The rash occurring in febrile diseases does not produce the elevation of temper-

ature by itself, but plays the rôle of a label with the inscription:—The cause of the fever is this. Such an occurrence we have, for instance, in all acute infectious exanthemata, as measles, small-pox, etc., as well as in other skin diseases which differ from the former in that they are not contagious and by the characteristic eruption appearing, it may be, on the first day of the disease, while in the contagious exanthemata only on the second day (as scarlet fever) or still later (measles, small-pox).

There are only a few febrile diseases in childhood: first, different inflammations, as erysipelas, phlegmon and furunculosis, which need not be discussed in full, because they are characterized by such evident symptoms that they are not likely to be overlooked; second, different eruptions, as urticaria, nodular erythema, erythema multiforme and purpura.

Urticaria is characterized by the quick appearance and disappearance of white blebs, as if they were produced by a burn or by a nettle. The rash occupies either separate places or the whole body, and itches severely. A mild urticaria rash of the face may appear very similar in its size and reddish color to measles. An inspection of the whole surface of the skin promptly clears away doubt, because urticaria is very seldom limited to the face, spreading usually over the legs and body, appearing there usually as whitish blebs. Besides this, urticaria is always associated with itching, which is wanting in measles. Urticaria being often associated with other diseases, as typhoid, scarlet fever and measles, we can hold it independently as a cause of fever only in a case where it affects an entirely healthy child, and if the fever, which appeared coincidently with the eruption, also vanishes together with the latter.

Of great service in the diagnosis of the febrile condition is also *herpes,* characterized by an eruption of thickly-crowded vesicles, of the size of a pin's head, with a transparent content. The usual locations of herpes are the lips and the nose. This affection of the skin, insignificant by itself, is important because it is not met with in every febrile condition, but only in some special diseases.

In the first place, one must put cold-fever—*fièvre herpétique* of the French authors, characterized by a cyclic course and belonging probably to infectious diseases. Descroizille has described

a whole epidemic of such an herpetic fever*. The disease begins with a prompt, considerable fever, which lasts for from three to six or seven days, and ends with crisis, and in which, several days previously, herpes appear on the lips.

Furthermore, herpes especially often accompanies croupous inflammation of the lungs, malaria, epidemic cerebro-spinal meningitis and gastric fever; on the contrary, it almost never occurs in typhoid fever and tubercular meningitis. Therefore, in some doubtful cases herpes may be of definite value in the diagnosis, for instance, of gastric from typhoid fever or tubercular meningitis.

Further, by inspection, we may discover the cause of fever on the very first day of the disease in the ACUTE SWELLING OF THE LYMPHATIC GLANDS OF THE NECK. I mean here not the separate parts, for instance, of the mouth, fauces, etc., where the basic disease, but not the glands, has a definite significance, but rather do I mean *idiopathic inflammation of the glands* located behind the upper end of the sterno-cleido-mastoid muscles, that is, under the ear and the mastoid processes and behind the angle of the inferior maxilla.

Primary inflammation of these glands, independent of eczema of the head, a discharge from the ear, or caries of the teeth, etc., is observed in children from two to four years of age, but sometimes also in nurslings as well as in older children. During the first seven to ten days the disease runs like an acute adenitis. Behind the point of attachment of the flexor of the head there arises a tumor of the lymphatic glands, which, accompanied by fever, reaches in the first three or four days the size of a walnut. It is of an hard, elastic consistence, very painful to touch and is covered with a slightly reddened, tense but not very œdematous skin. After five, seven or ten days from the beginning of the disease the fever abates. The tumor remains stationary a couple of days, then begins to decrease and in two or three weeks everything is over. Suppuration occurs very seldom. It is rare also that the glands on both sides become affected.

This form of adenitis differs from a symptomatic tumor of the glands in that, in the latter case, no inflammatory processes

*Revue mens. des maladies de l'enfant. 1884.

are to be detected on the mucous membrane of the mouth, nose and fauces, on the skin of the head or about the ear, which processes could explain the affection of the glands. The ætiology of the affection is obscure. I once met it in two sisters at the same time. As such a form of adenitis is not mentioned in the textbooks, it is therefore entirely unknown to young practitioners, who regard it as parotitis (mumps). The diagnosis is not difficult, provided the place occupied by the tumor and its *consistence* are taken into consideration.

The tumor in PERIPAROTITIS EPIDEMICA occupies exactly the region of the parotid gland, that is, it is noticeable just below and in front of the lobe of the ear, spreading on the corresponding cheek and upper part of the neck, where it disappears without any particular boundaries; in idiopathic adenitis, however, the tumor does not spread on the face, but is located behind the angle of the maxillary bone, below the mastoid process, and has quite sharp boundaries. The tumor depends not so much on the swelling of the parotid gland as on the *œdema* of the surrounding cellular tissue, therefore the tumor is entirely soft to the touch, but the skin covering it is pale. The painfulness of mumps to touch is noticed only on a limited area, namely, just under the attachment of the lobe of the ear and in front of the tragus; here also one can feel a small hardening, corresponding in its form to the parotid. In adenitis, however, the tumor is painful in all parts, and is solid, but the surrounding cellular tissue is not œdematous.

As less essential symptoms we may point out that parotitis is usually bilateral and ends with recovery in several days.

It should be remembered that there are interesting anomalous cases of mumps, differing from the typical forms in that the submaxillary gland, and not the parotid, becomes primarily affected. A soft œdematous tumor then appears, not in front and below the ear, but under the horizontal branch of the inferior maxilla, extending not so much on the face as on the lateral surface of the neck. If the submaxillary gland becomes inflamed simultaneously with the sublingual, then the œdema also spreads over the anterior surface of the neck and the submaxillary region. In an œdematous tumor of the cellular tissue one can easily feel the swollen submaxillary gland as a round, rather solid body and but little painful to touch. This tumor may be mistaken, first, for a perios-

titis of the inferior maxilla, which infrequently occurs in children suffering from carious teeth and which runs with fever; second, for acute lympho-adenitis.

Periostitis, like inflammation of the submaxillary gland (submaxillitis), is characterized by painful swelling of the cheek, and partly of the neck in the region of the submaxillary gland, and by œdema of the surrounding cellular tissue; but the essential difference is that, in the case of inflammation of the periosteum, the most painful spot of the tumor is its middle part, which is of very solid consistence and firmly attached to the bone; the covering of the tumor soon becomes red and glossy. The pain to touch in periostitis is considerably greater than in the case of inflammation of the submaxillary gland. In the beginning of lympho-adenitis separate enlarged glands may be felt; later on they coalesce in one large, solid and painful tumor.

In volume XXIX *of Jahrbüch. für Kinderheilkunde*, 1889, there appeared an article by Dr. Pfeiffer under the name of "Drüsenfieber" (*gland-fever*). As such he describes a special infectious disease characterized by a febrile condition and painful swelling of the neck-glands behind the sterno-cleido-mastoid muscles. In mild cases the fever terminates in one day, in severer it lasts for ten days, and one may detect in such cases swelling of the liver and spleen; pain is often met with in the median line of the abdomen below the umbilicus (affection of the mesenteric glands?). Suppuration never takes place. Pfeiffer includes this malady among infectious diseases, because he saw it occurring in family epidemics (four cases followed each other in the same family).

In general this disease exhibits great similarity to the before mentioned type of idiopathic adenitis, with the difference that Pfeiffer never observed the result of suppuration and that in his cases all glands of the neck became somewhat swollen and not the occipital alone, which, however, became affected oftener than the others. But this difference loses its significance, for Heubner sometimes observed termination with suppuration. He speaks only of swelling of the glands under the sterno-cleido-mastoid muscles and denotes the possibility of repeated exacerbations which may protract the febrile condition for three or four weeks. In two cases he saw the development of subsequent nephritis,

which may lead the physician to think of previous scarlet fever.

The cause of a fever may also be an *affection of the ears*, and not only inflammation of the middle ear, but also of the external ear (otitis externa) as well as furunculous inflammation of the external auditory meatus. The latter is easily determined by inspection, even to one not a specialist. A child five years of age or older will, of course, call the physician's attention to his disease, because acute otites, leading to fever, are always accompanied by considerable pain in the ear. In small children, especially in nurslings, the whole sickness manifests itself only by fever and a persistent cry, which stops with the occurrence of a discharge. However, genuine otitis does not often occur in children.

Of greater importance in the diagnosis of a febrile state is *snuffles*, because it occurs very often in children, and in a case of acute rhinitis we must think of several diseases, of which snuffles, as an early symptom of fever, stands very peculiar. These diseases are five in number:—

(1 A common cold in the head.
(2) Primary diphtheria of the nose.
(3) La grippe.
(4) Measles.
(5) Whooping cough.

Of the lesions of the mouth the three following may produce fever:—erythematous stomatitis, aphthous stomatitis and stomacace (noma). Their value as causes of the elevation of temperature, is not often appreciated, therefore I would like to point out that in small children even such an insignificant process as erythematous inflammation of the mouth may produce fever of 40 degrees C. (104 degrees F.)*.

An explanation of the febrile condition often may be obtained from an *examination of the fauces*, diseases of which are very frequent in children. In some cases the temperature is an expression of local lesions of the fauces; in others it depends upon the general disease of the organism. Especially in the acute infectious exanthemata, when eruption appears on the skin several hours or even twenty-four hours later than the rash on the mucous membrane of the fauces, we are able to diagnosticate such dis-

*See Diseases of the Mouth.

eases before the appearance of the characteristic skin eruption. Thus an examination of the throat helps the physician in many cases where he would be in doubt regarding the cause of fever (see Diseases of the Throat).

Febrile *diseases of the lungs* will only be mentioned because the cough, frequent respiration, etc., at once show the physician where he has to look for the cause of the fever. Without cough, but with fever and exhaustion, there is only *pleuritic exudation* when slowly developing; therefore, this disease sometimes remains undiagnosticated for weeks, despite its physical symptoms being so peculiar that they are not difficult to discover even on a superficial examination of the chest.

Incomparably easier is it to overlook *diseases of the heart*, because they often occur without apparent symptoms. One must bear in mind that endocarditis in children complicates not only an acute rheumatism, but also other infectious diseases, among which I would think, first of all, of scarlet fever, then of recurrent fever and measles. Exacerbation of fever in the period of lysis, or its relapse in the period of convalescence, usually depends on some complications, among which one should bear in mind endo- and pericarditis.

Diseases of the stomach and bowels, if they produce fever, are accompanied by clearly developed symptoms, excluding only some forms of gastritis, which simulate meningitis (see Diseases of the Stomach).

Of the febrile diseases of the genito-urinary organs, inflammation of the kidneys may be easily overlooked if the physician does not adhere to the rule to examine the urine in all cases.

Sometimes fever depends on an affection of the muscles, for instance, in muscular rheumatism or in severe muscle-pains of the abdomen as a result of exercise.

Of bone diseases, *inflammation of the vertebral column* is of the greatest value because of the frequency of its occurrence and of its consequences. This disease may remain as an undiagnosticated cause of fever during several days, even weeks, although usually very easy to be discovered, for it is only necessary to examine the vertebral column when one will be struck by its limited mobility and the painfulness of some vertebræ on pressure;

these evidences appearing before the formation of an angular deformity (scolisis, kyphosis).

[Of other diseases of the bones *osteomyelitis* is also the very frequent cause of fever, remaining often unrecognized (see p. 616, the note regarding the differential diagnosis between osteomyelitis and typhoid fever).—Earle.]

Thus, in all cases it is not difficult to discover the cause of fever, provided the rule be observed *to insist upon a thorough and minute objective examination of the patient.* If the physician will limit himself only to the organs to which his attention is called by the patient, through complaints, or by his family, he will always make the most improbable errors and oversights.

If the physician does not succeed on the first or second day in finding out any local disease in explanation of the fever, he cannot even then be sure that he has to deal with a fever without any local lesion, that is, with a general disease of the organism, because one should bear in mind the possibility of a *latent local disorder.* Diseases of a latent course are manifold, because very many local processes do not become developed in the first twenty-four hours. Doubt cannot obtain long, however, except in some forms of inflammation of the lungs and cerebral membranes.

In pneumoniæ, with a latent course, we frequently meet with *inflammation of the pulmonary apices,* which process does not become clear for perhaps a whole week and even longer. This point is brought out in the section on pneumonia. I will, therefore, limit myself to the remark that not every fever, accompanied by cough, should give rise to suspicion of a latent pneumonia. On the contrary, the physician will be assisted in the majority of cases by the temperature. If this is less than 39.5 degrees C. (103 degrees F.), he may positively exclude a beginning pneumonia. Very few diseases are associated with such a high and constant temperature as croupous pneumonia, especially when the apex is involved. For this morbid process a temperature of 40 degrees C. (104 degrees F.) may be held as the minimum, and 41 to 42 degrees C. (106 to 107.6 degrees F.) is not infrequent.

As to meningitis, the disease remains obscure in nurslings for a long time. During an entire week, and more, the child vomits daily and cries very much. Other cerebral symptoms being ab-

sent, the physician supposes dyspepsia when suddenly there appear convulsions, somnolence, etc.

If the physician has excluded all local diseases and reached the conclusion that he has to deal with a general disease, he is even then far from an exact diagnosis. In children febrile diseases of an unknown origin are frequently met with, which, simulating in the beginning a serious disease, terminate after two or three days with complete convalescence, so that before this the physician being unable to exclude different transitory and cold fevers cannot make a correct diagnosis or a prognosis.

From what is said above, it follows that the diagnosis of a febrile disease, on its first day, is far from being possible and that it is only to be made in cases of fever which depends upon a local disease, or on a general disorder where there is "a label" (herpes, snuffles, etc.). In all other cases one should wait two or three days. If during this time it becomes evident that we have to deal neither with a latent local disease, with a cold fever, or suspect a tardy eruption, we must then suppose a general infectious disease without distinctly developed local symptoms, as different forms of typhoid (abdominal, exanthematic, recurrent), febris intermittens, tuberculosis and pyæmia.

Great difficulties are sometimes encountered in cases of *protracted fever* which lasts many weeks, being of an unknown cause. Such fevers may have a manifold course of the temperature, resembling either febris continua remittens, or intermittens, or recurrens, but most often they are irregular altogether.

The causes of such "chronic" fevers are sometimes hard to be found. As, in a majority of such cases, an old, irregular malaria is to be suspected, we shall therefore speak of the diagnosis of such forms of fever in the corresponding section.

FEBRILE DISEASES WITHOUT STRICT LOCALIZATIONS.

DISEASES CHARACTERIZED BY FEVER OF THE CONSTANT TYPE.

TYPHOID FEVER.

The cause of typhoid fever is a bacillus, first described by Eberth and obtained by Gaffky in pure cultures. (Fig. 72.) Although this bacillus is constantly met with in the dejecta in the commencement of the second week, yet searching for it is associated with so many difficulties that the bacterioscopic diagnosis of typhoid fever is not of very much importance to the general practitioner. This difficulty especially depends upon the similarity of the typhoid bacillus to the intestinal bacillus (bac. coli communis). Incomparably more certain results may be obtained from the serum diagnosis according to Widal's method. The latter is based on Gruber's observations that the serum of animals which were made immune against cholera, typhoid and other diseases, added in small quantities to the bouillon culture of the corresponding microbe, exhibits a peculiar influence on it; the microbes lose their mobility, accumulate in little clumps and sink to the bottom as a flaky sediment, the bouillon thus becoming clear. This reaction was called by Gruber agglutination. There are two methods of producing the latter, the macroscopical and microscopical. In the former some quantity of blood serum of immune animals is added to the twenty-four hours' old bouillon culture and the mixture is put in a thermostat for from two to eight hours; the cloudy bouillon becomes clear, and on the floor of the vessel a flaky sediment is obtained. On microscopic examination one is first of all convinced by the control-culture that the bacteria are plainly movable; then different quantities of the bouillon culture are mixed in several Petri's cups—namely, in each cup are mixed ten, twenty, fifty, a hundred drops of the culture with one drop of the serum in question and a microscop-

ical specimen is prepared from every portion. If the serum possesses the agglutinating property, then *clumps* of entirely *immovable bacteria* appear in the field of vision of the microscope; at first in the spaces between the clumps a greater or smaller number of living bacteria also may be noted, but later they too die. Since Gruber's test may also be obtained on the common serum of animals (not immunized) and of man, if this be taken in large quantities (one part of serum for ten parts of bouillon) it is necessary to take certain amounts of serum in employing this reac-

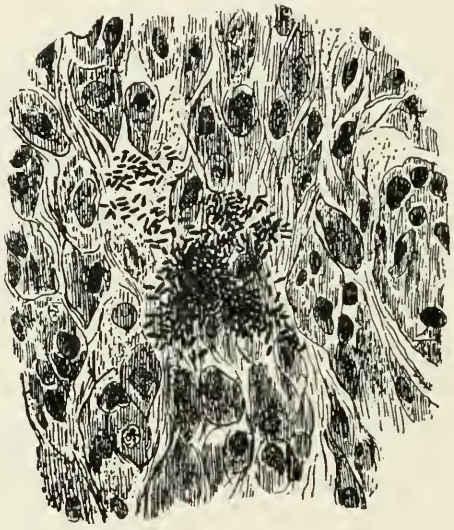

Fig. 72—Typhoid bacilli.

tion for diagnostic purposes. It is better to make several tests simultaneously in the proportion of one to ten (1 : 10), one to twenty (1 : 20), one to a hundred (1 : 100), etc. Gruber's reaction is also easily obtained with the serous fluid from a blister made by Spanish fly, being much weaker when made with milk and still weaker with the urine, tears and other excretions. Widal's merit is that he proved the agglutination as occurring early in the period of infection, in typhoid fever at the end of the first or in the beginning of the second week.

For obtaining the serum from a typhoid patient his blood, taken from the finger, is collected in a test-tube, where it coagulates with formation of some quantity of serum. The reaction

may be held as positive for typhoid, if the agglutinating power of the serum appears in the proportion of 1 : 50. According to Courmont's observations (40 cases), Widal's reaction is distinctly developed on the sixth or seventh day, but during the following days it becomes progressively stronger (in normal cases on the tenth day 1 : 100) up to the beginning of the period of defervescence; then the agglutinating power of the serum begins to decrease and in many cases entirely disappears after a couple of weeks, but, as is proven by many authors, it is not always so. It was found that not rarely the reaction succeeds even several years after convalescence and that Widal's test therefore may be of decided significance only in the presence of a circumstantial history, that the patient previously had had no typhoid fever. The degree of agglutinating properties of the serum varies in different cases of typhoid from 1 : 100 up to 1 : 200. All authors agree that Widal's reaction is of immense diagnostic value; cases of failure with it in the second week of typhoid belong to rare exceptions (Widal himself had one negative result among 163 positive ones).

Typhoid fever is characterized in childhood by the same symptoms as in adults, but has a comparatively slighter course.

The diagnosis of typhoid is in the majority of cases not difficult. As chief symptoms, there may be described: typical course of the fever (its duration and course), a fresh tumor of the spleen and rose-spots. Of less importance are symptoms on the part of the digestive organs, bronchitis, symptoms of the affection of the central nervous system and the general habitus of the patient.

Of all essential symptoms of typhoid the most important in diagnosis is the *fever* which, in contrast with all other evidences, is never absent in typhoid and is so pathognomonic of the majority of cases, by its course and duration, that it often makes the correct diagnosis of typhoid possible even in the absence of many other characteristics of the disease.

The commencement of the febrile period is usually preceded for several days by indefinite symptoms of general malaise, loss of appetite, languor, restless sleep, etc., so that it is difficult to say from which day the child was sick. The count of the days of the disease usually begins from the first day of the febrile condition. One may accept as a rule that typhoid fever never starts with a noticeable chill and violent fever, but usually with a slight

chilliness accompanied by a mild elevation of the temperature. During the first three to five days the fever increases progressively, but gradually, with remissions in the mornings and exacerbations at five or six o'clock in the evening until the acme, nearly 40 degrees C. (104 degrees F.) will be reached. If 40 degrees C. (104 degrees F.) are observed on the first day, or if the evening temperature never reaches 36.9 degrees C. (98.5 degrees F.) during the first week, it is altogether improbable that we have to deal with a case of typhoid.

Such a *gradual increase of the fever in the beginning of the disease constitutes a peculiarity of typhoid fever* (except some abortive forms), *which distinguishes it from typhus and relapsing fevers.* (Fig. 73.)

Having reached its acme at the end of the first week (nearly 40 degrees C. (104 degrees F.) the fever remains several days at this height with remissions in the morning, and evening exacerbations, while the difference between low and high temperatures during the day may vary from 0.5 degrees up to 1.5 degrees C. Such oscillations are almost a rule in typhoid, so that if the difference between the minimum morning and the maximum evening temperatures is, during the first two weeks of the disease, less than 0.5 degrees C., or if it be in the morning higher than in the evening, then a diagnosis of typhoid becomes doubtful.

For the diagnosis of typhoid it is important that the fever be not prone to quick and considerable oscillations, as happens, for instance, in la grippe and tuberculosis; but such variations of the temperature take place in typhoid under the influence of strong apyretics, occurring then even more often and perhaps easier than in other fevers.

From the middle of the second and beginning of the third week (the former more often) one can observe a greater fall of the morning temperatures as an expression of the beginning *lysis*, with which typhoid usually terminates in the third or during the fourth week. Crisis in twenty-four to thirty-six hours is against typical typhoid fever; such a termination is more characteristic of typhus fever and of abortive typhoid.

As a second sign important in the diagnosis of typhoid comes *tumor of the spleen*, if only one can prove it as being recent. One must regret that this sign does not belong to the constant symp-

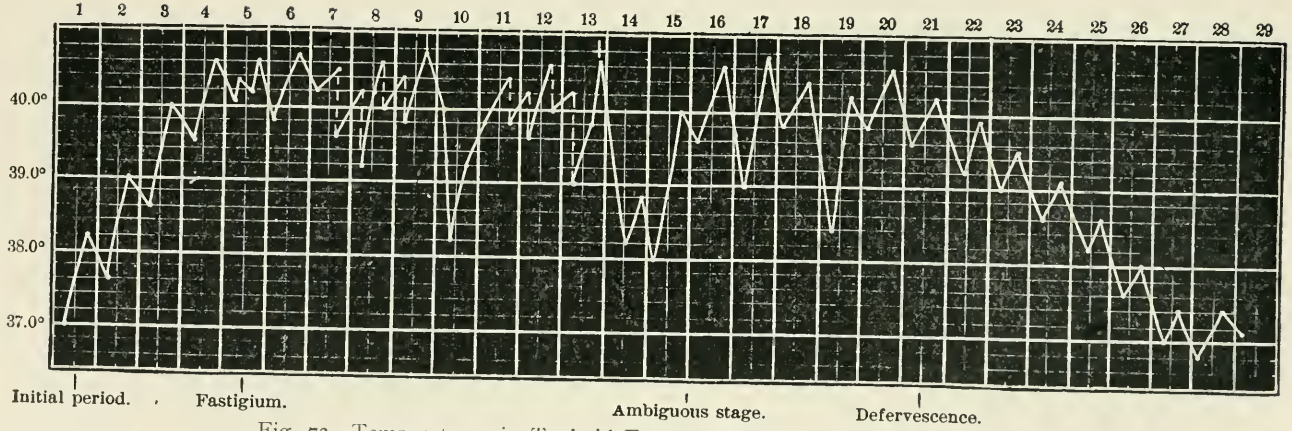

Fig. 73—Temperatures in Typhoid Fever.—The dotted lines represent the remissions in temperature after cool baths, the crosses (+) the exhibition of antipyretics. (From Strümpell.)

toms of typhoid (in ten per cent. tumor of the spleen is entirely impossible of detection, by palpation it is determined in forty to fifty per cent.). If the tumor of the spleen occurred in typhoid as constantly as the fever, I am convinced that we would less often confound typhoid with meningitis and tuberculosis than occurs at the present time. In the majority of cases tumor of the spleen is met with in typhoid from the fourth up to the sixth day, but sometimes earlier.

The third cardinal symptom—*typhoid rose-spots*—is of still greater value in the diagnosis of typhoid than the tumor of the spleen, but these spots are absent oftener. This rash consists of pale-pink, rather elevated spots, of the size of a pin's head, disappearing under pressure of the finger. They occur most often on the back, abdomen, chest, and seldom on the limbs. The rash usually is not abundant; not infrequently there are to be seen only about ten small spots, appearing from the seventh up to the eleventh day. The rash makes itself evident as a new eruption of single rose-spots during several days in succession, so that one may sometimes succeed in finding fresh spots during the whole third week.

On the part of the digestive organs the following may be of importance in the diagnosis of typhoid: Change of the tongue, absence of primary vomiting (at least, in the majority of cases), gurgling and tenderness on pressure in the region of the cæcum (from the end of the first week), moderate diarrhœa (in the beginning of the disease constipation is more common, but from the end of the first week, diarrhœa and a slight meteorism obtains (as a difference between cases of tubercular meningitis similar to typhoid fever).

Some data for the diagnosis of typhoid may be furnished by the diazo-reaction of Ehrlich. This test is based upon the fact that, if, in any disease, certain little-known aromatic bodies are formed, the latter give, under the influence of sulpho-diazobenzole, a characteristic colored reaction. For this reaction two solutions are necessary:

℞	Acidi sulphanilici,	5.0 (℥i. gr. xvi.)
	Acidi hydrochlorici pur.,	50.0 (℥i. ℥v.)
	Aq. destil.	1000.0 (lb. iii.)

And

℞ Natrii (sodii) nitrosi, 0.5 (gr. viii.)
Aq. destil., 100.0 (℥iii. ℨi. ss.)

Fifty cubic centimeters of the first are to be mixed with an equal portion of urine, then liq. ammonii in one-eighth volume is added and the mixture shaken. If the case be positive the foam forming after shaking is of red color. This test always succeeds in typhoid, beginning from the fourth to the sixth day of the disease, and is persistent during the whole period of fever. The absence of the diazo-reaction during the acme of the disease is against typhoid. If the reaction once disappears, it appears in cases of relapse; but this test proves negative as soon as the temperature depends on complications.

For the diagnosis of typhoid from miliary tuberculosis the diazo-reaction is of but little value, being equally peculiar to both maladies.

Symptoms on the part of *the nervous system* may also be absent, especially in children younger than five years. In other cases they are not very characteristic and consist only in headache, general malaise and night-delirium. Finally, in a third series of cases, they are pronounced as well as in adults and give an especial color to the habitus of the patient; flushed, rather swollen face, injected eyes, somnolent, impartial expression, rather dry tongue, narrow and with a red top, and the posture on the back—such is the usual aspect of a patient suffering from typhoid of mild severity. In grave cases the face becomes pale and expresses great prostration.

Among the common symptoms of typhoid one may also include the well-developed hyperæsthesia of the skin of the abdomen and inner surface of the thighs, so that each folding of the skin is accompanied by a severe pain. As any pressure on the abdomen, slight as it may be, is also painful, one must be careful of accepting this hyperæsthesia as a symptom of peritonitis; it is easy here to avoid an error, as a painful folding, not only on the abdomen, but also on the thigh, immediately clears away the doubt.

Regarding the *pulse* it may be said that, when the question is as to the differential diagnosis between typhoid and tuber-

cular meningitis, one should bear in mind that in typhoid in children older than five years it is usually rather retarded in comparison with the temperature; a temperature of 102 degrees F., for instance, is accompanied by from 90 to 100 pulse-beats. The older the child the more pronounced the influence of the typhoid poison on the heart. Of more importance as a symptom in favor of meningitis, and against typhoid, is *irregularity* of the pulse; but a pulse by itself irregular and retarded does not yet exclude typhoid, occurring also in this disease; but in connection with other symptoms it may be of decided importance.

Slight, abortive, medium and grave forms of typhoid are to be distinguished according to the degree of development of nervous symptoms and to the duration of the febrile period.

The duration of cases of slight severity varies from two and a half up to three and a half weeks; if the fever lasts more than four weeks then this points toward a complication (usually bronchitis and hypostatic pneumonia) or an error in the diagnosis (the fever in tuberculosis may resemble very much that of typhoid, but differs from it by uncertain duration). In case of an uncomplicated typhoid the fever during the third week should be lower than in the second; otherwise the existence of typhoid becomes very doubtful.

Mild typhoid differs from the preceding form not so much by its duration (it may last even more than three weeks), as by its benignity (good condition of the general health, sound general appearance of the patient, a quiet sleep, absence of delirium). If typhoid runs with pronounced nervous symptoms, but terminates almost by crisis and before two and a half weeks, then such forms are called abortive typhoid (typhus abortivus), and if a case of typhoid not only terminates earlier than usual, but also runs an easy course, then this will be a slight abortive typhoid—typhus lævis abortivus.

Severe forms of typhoid are especially characterized by pronounced affection of the consciousness and by collapse, while the following symptoms are observed:

(1) The temperature during the acme of the disease reaches even in the morning 104 degrees F.

(2) Very dry, *fuliginous* tongue and lips.

(3) Pale face.

(4) Involuntary defecation and urination.

(5) Violent delirium during day and night and contracture of the neck.

(6) Very frequent, feeble pulse and other symptoms of cardiac collapse, as frigidity of the limbs, slight cyanosis, hypostases in the lungs.

(7) Variable complications on the part of the chest, abdomen and nervous system.

As to the *differential diagnosis of typhoid fever*, it does not exhibit, in the beginning, any peculiarities, and therefore it is very difficult to recognize typhoid in the first week. At this time we must decide the question per exclusionem, and first of all to ascertain if the fever does not depend upon some local process, as discussed in the preceding section. If this question be decided negatively, then it will be necessary to determine with which infectious disease we have to deal. It is, of course, easy to exclude all acute infectious exanthemata after the third day, but it is not difficult to confound with typhoid various mild forms of fever which last only a few days and depend on manifold causes. Here may be included, for instance, the so-called gastric and herpetic fevers and fevers due to cold, the diagnosis of which is mentioned in the section on the Semeiology of Fever. Here may be included also some cases of la grippe, namely, that variety which occurs without catarrhs and manifests itself only by symptoms of general infection, i. e., by sudden fever, general malaise, headache and pains in the limbs and the back; sometimes there is vomiting at the beginning. The diagnosis is difficult only at the beginning of the epidemic. Later on when it becomes evident that the sick recover after three or four days, then all doubt regarding the possibility of typhoid disappears, as the correct diagnosis of la grippe becomes easy during the height of the epidemic, even for the laity, all cases being very similar, one to another, in their main features.

Difficulties often appear in mild forms of typhoid ending with recovery in a few days, and which are to be recognized only by some ætiological factors, for instance, a domestic epidemic; therefore in sporadic cases there may be but the suspicion of a diagnosis. The question cannot be decided in this stage of the disease even by Widal's test, which usually proves negative before

the seventh day. A pronounced sweating, as well as snuffles, occurring during the first week is contrary to typhoid, but epistaxis is in favor of it. Herpes of the face is also against typhoid. If the morning remissions are in the beginning of typhoid of the character of complete intermissions and the child in such a case begins to feel chills at twelve or two o'clock and fever in the evening, then we have a picture very similar to febris intermittens, especially if there is a simultaneous swelling of the spleen. The difference, however, is that the exacerbations in typhoid appear in the evening, while in intermittent fever they usually occur in the morning or in the middle of the day; secondly, the temperature in the first days of typhoid does not rise higher than 100.5 degrees to 103.2 degrees F., while in the paroxysm of malaria it is usually higher than 104 degrees F.; thirdly, moderate doses of quinine stop the febris intermittens, but are without any influence upon the typhoid.

In the second week the diagnosis of typhoid is, in the majority of cases, easy, especially if the patient has been under observation of the physician for a couple of days. The temperature curve, a fresh tumor of the spleen, roseolæ and the characteristic habitus at once indicate to the physician what he has to deal with. As acute spotted fevers are at this time easily excluded, as well as all local disorders (because they would have been determined as such), the temperature curve and the recently appearing tumor of the spleen are plainly sufficient for the diagnosis. Still doubt *may* arise regarding three morbid processes: typhoid, spotted fever and relapsing fever, but the latter may be readily rejected as its first attack usually ends on the fifth to the seventh day, being protracted up to the second week only in exceptional cases. The main difference regarding *spotted fever* consists in the peculiarities of the eruption. Although the single spots (roseolæ) of spotted fever possess no essential difference from those in typhoid, nevertheless there is the following disparity: (1) The *time of eruption:* in spotted fever this appears on the third or fourth day, seldom later, while in typhoid most often in the beginning of the second week up to the eleventh day. (2) The quickness of the eruption—in the former case roseolæ appear in great quantities at once, in the latter, however, scantily and during from two to four days. (3) The *abundancy of the rash and its*

extent: In spotted fever the rash is mostly very abundant, occupying not only the trunk, but also the limbs, sometimes even the face; in typhoid, the rash is located on the trunk, often being very scanty.

Further difference is shown in the *fever,* which in typhus is characterized, contrary to typhoid, by its sudden onset, so that there is often a *chill* followed by a considerable fever, which even on the first, or at least by the second evening, reaches 104 degrees F. The maximum often coincides with the evening of the second or third day, the termination being by *crisis.*

The duration of spotted fever is from eleven to fourteen days.

On the part of other symptoms, i. e., tumor of the spleen, nervous symptoms, dry tongue, bronchitis, there is no noticeable difference between these two diseases. The symptoms of anomalous forms of typhus fever which run without any eruption do not differ essentially from those of an abortive typhoid fever, because a sudden onset and termination by crisis is very peculiar also of the latter; therefore an exact diagnosis of abortive typhoid fever is possible only in such cases where the source of infection is known.

Thus the diagnosis of typical cases of typhoid, of a regular course, is easy, but some complications or irregularities in the sense of an enormous development of some symptoms in comparison with others, or the appearance of some symptoms which are not peculiar to typhoid fever, may be so confusing that the physician will be kept many days in a condition of complete doubt.

The greatest difficulties are sometimes presented in *a diagnosis between typhoid and acute miliary tuberculosis,* but this we shall speak of elsewhere; at present we point out only the diagnosis between *typhoid and tubercular meningitis,* which does not exhibit in typical cases any difficulties. If, nevertheless, the young physician sometimes mistakes tubercular meningitis for typhoid fever, this may be explained only by the fact that special pediatric clinics are very few and small, and that in the clinics for adults students do not observe cases of meningitis at all in comparison with cases of typhoid fever; therefore they regard tubercular inflammation of the cerebral meninges, in comparison with typhoid, as a great rarity, and forget in their private practice about the existence of the former altogether. Nevertheless, meningitis tu-

berculosa occurs in childhood, especially in small children, even oftener than typhoid, so that West claims that in doubtful cases one may be guided by the age of the child; if not yet two years of age, then meningitis is more probable, if older—then typhoid.

The most typical differential signs of tubercular meningitis are the following: It runs almost *without fever* and *always begins with vomiting*, which occurs repeatedly during several days; in typhoid fever this never happens. *Headache*, more or less severe, lasts from the beginning up to the period of impairment of consciousness. If these symptoms—headache and vomiting—are decidedly developed, if, for instance, the headache is so violent that it makes the patient scream, grasp at his head and throw himself about, with vomiting after each drink, dose of medicine or simply at the change of the posture of the patient, and all this lasts from three to five days, then typhoid is not to be thought of.

Toward the end of the first week tubercular meningitis becomes still clearer; the child becomes *somnolent*, his *pulse* is abnormally *slow* and becomes *irregular*, the abdomen sinks or, at least, becomes flat (while in typhoid it becomes distended even on the third or fourth day), the expression becomes immobile, etc., etc.

But apart from these so-called regular cases others occur where the diagnosis between typhoid and acute hydrocephalus is uncertain during several days. The more frequent error consists in that tubercular meningitis is mistaken for typhoid (because variations from the normal condition are more peculiar to the former disease). The possibility of an error may be explained from the fact that vomiting is not always persistent in the beginning of meningitis and may occur once or twice also in the commencement of typhoid; furthermore, apathy and somnolence are often met with in typhoid (as a result of the narcotic influence of the typhoid virus) as well as a rather slow, and even irregular, pulse (seldom) and constipation; on the other hand, however, temperatures higher than 102 degrees F. are common to meningitis, the irregular pulse being, at the same time, absent.

But in comparatively simple cases doubt does not last long, provided swelling of the spleen and rose-spots are absent. Very soon, that is, after the second day, the diagnosis clears up, as the cerebral symptoms do not increase in typhoid, they are not com-

plicated by new ones; while tubercular meningitis develops progressively.

Incomparably more difficulties are presented by those cases of meningitis which start and run several (ten to fourteen) days like a very mild typhoid, i. e., without any cerebral symptoms, even without vomiting and headache, but more or less suspicious symptoms gradually begin to appear in the second and third week. Such cases are described by Rilliet and Barthez as the *typhoidal form of tubercular meningitis.* According to these authors this morbid process starts as acute miliary tuberculosis which, very early, becomes complicated by the affection of the cerebral meninges, as one of the frequent localizations of general tuberculosis.

In our opinion, two varieties of acute hydrocephalus are to be referred to the so-called typhoidal form of meningitis; one variety being a real general miliary tuberculosis with subsequent affection of the cerebral membranes, running therefore, for some days without any cerebral symptoms (the febrile prodromal period).

Another variety of typhoid form of hydrocephalus is presented by a genuine typhoid fever, complicated in its further course by a simple (not tubercular) serous meningitis. One such case, verified by post-mortem, was described by the author in the first volume of his Lectures on Acute Infectious Diseases.

In both varieties the cerebral symptoms appear comparatively late, usually in the second week from the beginning of the fever or still later, but the difference is that in the first variety neither tumor of the spleen, nor typhoid roseolæ, are to be noted during the whole period of fever; while in the second form both these symptoms are present, and to this fact belongs the essential clinical difference of both these varieties.

The diagnosis between typhoid and ulcerous endocarditis is also very difficult, but this is practically of little importance, as ulcerous endocarditis occurs in childhood very seldom. It simulates *grave* typhoid; therefore it may be suspected only in case the appearances of severe typhoid develop in a child suffering from a heart lesion and if symptoms of embolism appear during the disease, as, for instance, a sudden hemiplegia, hæmoptoë, petechiæ on the skin, etc. Tumor of the spleen is met with in

ulcerous endocarditis not less often than in typhoid, roseolæ are also frequent, so that these two symptoms, being usually very important in the diagnosis of typhoid, do not decide the question in the given case. In many cases the character of the fever is contrary to typhoid, being, in ulcerous endocarditis, as well as in pyæmia, of irregular course, with sudden elevations following the chills, then declinations to normal, accompanied by violent perspiration.

A diagnosis between typhoid fever and acute purulent or *cerebro-spinal meningitis* is to be made in cases of a very severe typhoid (usually of spotted fever), beginning without any precursors and running from the start with a considerable fever and great impairment of the sensorium. Toward the end of the first week opisthotonos may appear, consciousness disappears, and in general the picture of the disease resembles that of acute meningitis. In favor of typhoid there is noted in such cases a fresh *tumor of the spleen*, absence of *persistent vomiting* in the beginning of the disease, as well as of convulsions, and particularly the *protracted course*. Death from typhoid usually occurs between the seventh and eleventh days, while in purulent meningitis on the third to fifth day (in cerebro-spinal meningitis it is impossible to determine the end).

Primary inflammation of the cerebral membranes is proven by the persistent vomiting in the first days of the disease, by very violent headache, by the early appearance (often before the third day) of convulsions and unconsciousness and by the presence of some cause of the meningitis (trauma, sunstroke, discharge from the ear, etc.).

Evidences of severe typhoid, namely, violent fever (104 degrees F. and more), blunted consciousness, fuliginous tongue, tumor of the spleen, often also diarrhœa and cough, develop sometimes during acute inflammation of the marrow of the bones (*osteomyclitis acuta*); but this disease is associated from the very first with very severe pains in the affected limb (usually in the long bones—the femur and tibia) and by its swelling; these symptoms make the diagnosis easy.

[The diagnosis between typhoid fever and acute osteomyelitis is sometimes very difficult, especially when the consciousness of the patient is so impaired that he does not notice the pain, which

is the chief, and the earliest, symptom of osteomyelitis acuta, usually being preceded by a chill, followed by high temperature. The pain is local, quickly becomes severe and is generally of a throbbing character (Nichols). "The pain is usually referred to the shaft of some one of the long bones, commonly at one end near the epiphyseal line. The limb at this time often is not so sensitive on motion, but the pain is intense on percussing the bone, even very lightly, or on continued pressure. Usually at a very early period swelling of the soft parts about the bone appears, and this swelling soon shows pitting on pressure and marked redness. The adjacent joint frequently becomes tender, hot and swollen. Rise of temperature to 103 degrees or 104 degrees F. often accompanies the early pain, and frequently the pulse is greatly accelerated, 120 to 140 beats per minute. Evidence of constitutional disturbance and infectious absorption usually appears early. The tongue is dry, coated and tremulous, the face drawn and flushed. Delirium, often of a mild type, is a very common factor, and this delirium frequently persists for some weeks after drainage of the bone has been made. Abscess of the soft parts may give deep or superficial fluctuation, sinuses may appear. The leucocyte count is usually very high." (Nichols.)

The appearance of the osteomyelitic process in the diaphysis, usually near the epiphyseal line; the early severe pain; and the early appearance of constitutional symptoms distinguish this morbid form from tuberculosis of the joints.

The great severity of the affection of *one* joint, with the usual marked redness and œdema of the soft parts, and the almost constant bone tenderness, allow the differentiation from acute rheumatism.

From typhoid fever osteomyelitis may be differentiated by the pain, presence of local symptoms, high leucocyte count, sudden onset and absence of Widal reaction.

All this will permit an early determination of osteomyelitis, which diagnosis should be made as promptly as possible, because this disease, being an acute infectious one, quickly leads to death if left without suitable treatment, which consists in the earliest surgical interference.*—EARLE.]

*I am indebted to the most excellent paper of Dr. Edward H. Nichols, of Boston, ("Acute, Subacute and Chronic Infectious Osteomyelitis; its

RELAPSING FEVER.

Febris recurrens, included among contagious and epidemic diseases, is characterized by a peculiar course of fever, which is made up of two or three attacks, each lasting several days and separated from each other by an apyretic period of from seven to ten days. (Fig. 74.)

Each attack begins suddenly without precursors, with an abrupt elevation of the temperature, which reaches in a few hours 104 degrees F. and even more. The first attack lasts from five to seven days, the second from three to five days; both end by crisis,

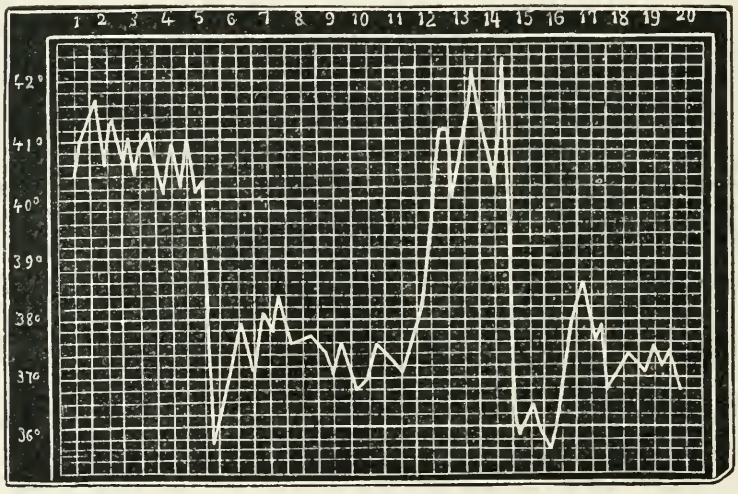

Fig. 74—Temperature curve in relapsing fever (after Wunderlich.)

which comes on as suddenly as the primary elevation of the temperature (the latter falls from 104-106 degrees to the normal in a few hours.

The relapses of the fever are so constant in this disease that they aptly signify the name and make the diagnosis clear. Yet

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Pathology and Treatment," *Jour. Am. Med. Assn.*, February 13, 1904, pp. 439-466). See also: John Bottomley in the same journal, July 25, 1903, pp. 222-225, and the interesting discussions regarding the differential diagnosis from typhoid and rheumatism by Willard, Stewart, Gibbons and Murphy. See also: "Pyogenic Inflammation of Bone," Bayard Holmes, *Ill. Med. Jour.*, January, 1904, p. 569.

relapsing fever is very easy to be confounded, during the first attack, with typhus or abortive typhoid fevers, because of the abrupt rise of the temperature. The difference lies in the sudden and considerable swelling of the spleen, which may be felt on palpation sometimes as early as the second day and which is painful, as well as in the violent muscle pains (calves, occiput). Crisis never occurs in typhoid so quickly as here. In doubtful cases the diagnosis may be established by an examination of the blood for "spirilli" which never are absent in relapsing fever during the period of fever, occurring as very thin, dark threads, wave-like, twisted, constantly moving, of the size of three or four blood corpuscles (Fig. 75.) The same method makes it possible to

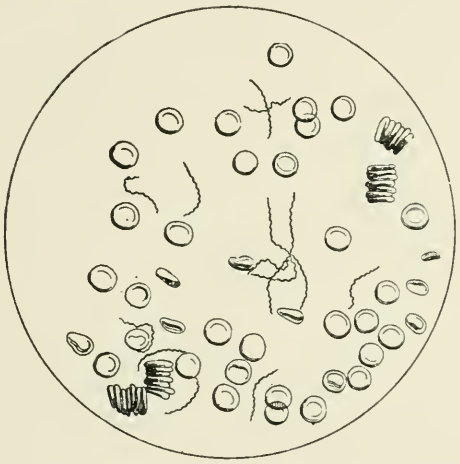


Fig. 75—Obermayer's spirochetæ (Lenhartz).

distinguish the first attacks of relapsing fever from la grippe, which is also characterized by pains in the muscles and by abrupt rise of temperature.

[For examination of the blood for Obermaier's spirilli, which are the cause of relapsing fever, one should take a very small drop of blood, so that it will not spread beyond the edges of the cover glass. The blood is taken from the tip of the finger by a puncture with a needle. Under the microscope one can see single red blood corpuscles spread all over the field of vision, while if the blood-specimen is not thin enough, then the whole field of vision will be covered with blood corpuscles and it will be difficult to notice

the spirillæ. If there are spirillæ then they are seen very distinctly, especially if some of them adhere by one end to a red blood corpuscle. In a few minutes the blood begins to coagulate, a net-work of fibrin appears, and it is then quite difficult to find the spirillæ. To avoid this and also to preserve the specimen for a longer time, it is advisable to add to the fresh drop of blood an equal quantity of Müller's fluid. Filatov: *Lectures on Infectious Diseases in Children.* Vol. I. Rus. Ed.)

One may also use Günther's method, viz., the specimen is dried and fixed (by heat), then is put for ten seconds in a five per cent. solution of acetic acid to extract the hæmoglobin from the red blood corpuscles, and then the specimen is stained with gentian-violet or fuchsin.—EARLE.]

ACUTE MILIARY TUBERCULOSIS.

We include this malady among general infectious diseases without a certain localization, not only because it resembles in clinical features the infectious diseases of this category, but also because of its pathogenesis (bacillar infection) and pathologico-anatomical changes in the organism.

Indeed, a definite localization cannot here even be thought of, because, first, there is no organ which always becomes affected in acute miliary tuberculosis, and, secondly, there is no organ which in all cases is spared. In one case the cerebral membranes especially become affected, in other cases the lungs, or sometimes the tuberculosis spreads all over the body, the abundant eruption of the tubercles occurring not only in the lungs, but also in the serous membranes and parenchymatous organs, i. e., in the liver, spleen, kidneys, etc. In view of such a diversity of pathologico-anatomical changes in miliary tuberculosis, there is no wonder if also its clinical picture exhibits in single cases great variety. The variety is shown by the different ways of spreading of the tubercles in the body. In some cases, for instance, the eruption of the tubercles occurs simultaneously in different organs and becomes especially concentrated in the lungs; then we have a febrile disease of very acute course, with cough and dyspnœa and fatal termination in from two to four weeks. Such a form of acute miliary tuberculosis, being very similar to typhoid fever, is known as the typhoidal form.

In other cases the development of tubercles occurs slowly and if the cerebral membranes do not become affected, then the disease lasts many weeks, appearing mostly as a moderate fever—this is the *subacute, or latent miliary tuberculosis.* If the cerebral meninges be affected from the very first, then arises a form of miliary tuberculosis known as *tubercular inflammation of the cerebral membranes* or, as this process is accompanied by the formation of a serous exudation into the cerebral ventricles, we get the form of *acute tubercular hydrocephaloid.*

Acute miliary tuberculosis either complicates tuberculous or catarrhal pneumonia and little changes the picture of previous disease, although it quickens the fatal termination, or it develops independently in children seemingly healthy, and in such a case it has a different course. We shall speak here only of the independent forms of tuberculosis.

The development of all these forms of miliary tuberculosis is usually preceded by a prodromal period in the form of a gradual fall of the general nutrition. The symptoms belonging to this period were mentioned in the section on tubercular meningitis. The course of different forms of tuberculosis will vary, dependent on the rapidity of the development of tubercles and their localization.

The typhoid or acute form of miliary tuberculosis begins, like many other infectious processes, with a rather abrupt fever, followed by cough, but it is especially characteristic that the patient complains of very quickened breathing (fifty to sixty in elder children, in younger eighty to ninety per minute). Later on there appear fine and medium moist râles and dyspnœa, according to increase of the catarrh. The fever gradually increases, being usually of irregular type and accompanied in its further course by different symptoms peculiar to a grave typhoid, as, for instance, dry tongue, fuliginous coating on the teeth, blunted consciousness, delirium and general weakness.

In general a picture is obtained which highly resembles typhoid complicated with capillary bronchitis. This similarity may be explained by the fact that in both diseases, not only the single symptoms, but also their grouping give the same result. The diagnosis may remain doubtful until the death of the patient, and only the post-mortem explains the disease.

In many cases, however, the diagnosis is possible partly from the history, which points toward tuberculosis in general, and partly from the symptoms present.

In all cases, where any tubercular infection is to be suspected, we must search for the *hereditary predisposition to tuberculosis* (the condition of health of the brothers and sisters, scrofulosis in the family, rachitis in the first years of life) and for the prodromal period, which is rarely absent in tuberculosis, being distinctly longer than in typhoid. The *ætiology of the disease* is also very valuable in the diagnosis.

An entirely different impression is made upon the physician with reference to the disease under observation according as to whether it affects a child previously in good health and in whose family typhoid has occurred, or in one whose illness seems to bear relation to some preceding affection, as measles, la grippe or protracted suppuration.

As to signs, it should be borne in mind that *a fresh swelling of the spleen and typhoid roseolæ* in a patient with the symptoms of a grave typhoid, but in whom the diagnosis is under doubt, allow us to diagnosticate typhoid and to exclude tuberculosis, especially when the spleen is large and palpable, because the eruption of tubercles in the spleen produce but a slight enlargement of the organ. The more severe the typhoid—and it is severe typhoid that is usually confounded with miliary tuberculosis—the larger is the splenic tumor, therefore one may establish the rule, that *in the absence of a pronounced tumor of the spleen, despite the high fever, accompanied with a violent delirium, cough and decidedly pronounced other infectious appearances, the diagnosis must be made very cautiously, and acute tuberculosis must be looked for.*

This malady should be suspected especially in a case when *there are present symptoms not indicative of typhoid, while those peculiar to typhoid* (tumor of the spleen, roseolæ, diarrhœa) *are absent.* Symptoms which are against typhoid and for tuberculosis are the following:

The character of the fever.—The fever may be, in acute miliary tuberculosis, of any type, even a regular continua remittens. Here only the absolute height of the temperature may be of value: if during several days in succession the morning temperature is higher than 104° (40° C.), this alone will be against ty-

phoid. Still more peculiar of tuberculosis are unaccountable and great variations of the temperature often occurring in this disease, for instance, 99.5° (37° C.) in the morning, and 104° (40° C.) in the evening; and the perverted type of the fever, accompanied by frequent and profuse perspirations and very much quickened pulse (in typhoid fever, as already pointed out, the pulse is often rather retarded especially in the first two weeks of the disease). (Fig. 76.)

Indications on the part of the respiratory organs.—In acute miliary tuberculosis a severe cough and accelerated breathing are pronounced from the very first, while in typhoid during the first

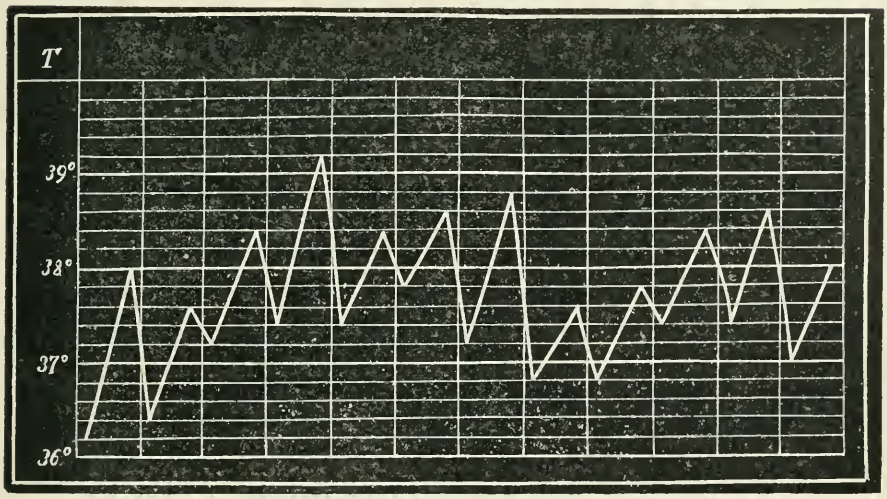


Fig. 76—Hectic fever in tuberculosis.

week there is neither pronounced bronchitis nor cough, and never labored breathing. In typical cases of acute miliary tuberculosis, when the disease is limited to the development of numerous tubercles in the lungs, but without the formation of inflammatory consolidations of the pulmonary tissue, percussion proves negative, while by auscultation some catarrhal râles and a rough articular respiratory murmur are noted, in short, signs of an insignificant bronchial catarrh. It is therefore important that *despite the negative results of the physical examination of the chest, the patient is suffering from dyspnœa and annoying dry cough.* In those comparatively rare cases where the tubercles appear on the pleural

surface, or that of the pericardium, a very soft pleuritic or pericardial friction sound may be heard, which is decided proof in favor of miliary tuberculosis and against typhoid.

Furthermore, against typhoid and for tuberculosis are: a particular paleness with a cyanotic hue of the face and, according to Bouchu, hyperæsthesia of the chest.

The duration of the disease.—Typhoid fever ameliorates in the third week, while the symptoms of tuberculosis either continue increasing or at least remain *in statu quo.*

Finally, of a decided value in the diagnosis of miliary tuberculosis is *the presence of tubercles in the eye,* but unfortunately this symptom does not occur in all cases. Sometimes they appear very early, for instance, several weeks before death; in other cases one or two days before the fatal termination. As the acuteness of vision does not suffer from the presence of tuberculosis of the choroid, and there are no subjective complaints, only repeated ophthalmoscopic examinations of both eyes will detect them (very often only one eye becomes affected).

To sum up, we come to the conclusion that the following data are in favor of tuberculosis and contrary to typhoid: The ætiology (heredity, measles, whooping cough, etc.), absence of enlargement of the spleen and of roseolæ in the presence of the high, but irregular, fever and the violent cough with dyspnœa, the results of the physical examination of the chest being negative. The diagnosis is certain if tubercles of the choroid be detected. Of decisive value is the presence of tubercle bacilli in the sputum. But the absence of these two signs does not exclude tuberculosis, because bacilli do not occur in the sputum during miliary tuberculosis if the pulmonary tissue is at the same time not affected—the search for the bacilli in the blood being very difficult.

The subacute form of miliary tuberculosis continues either without any cough, or with symptoms of moderate bronchitis, but without dyspnœa and even accelerated breathing. This disease is indicated by fever, which reaches 99.5°-100.5 (37.5°-38° C.) in the morning and 102°-103° (39°-39.5° C.) in the evening. There are no local signs, the child is up, has appetite and does not create the impression of a seriously sick patient. Since the physician does not find any local affections to explain the fever, he supposes a mild typhoid; but against his prognosis the fever becomes pro-

tracted for more than four weeks and everything, at last, becomes clear by the appearance of tubercular pneumonia or acute hydrocephalus.

The duration of the disease directly depends on how quickly the tuberculosis spreads over the cerebral meninges, which usually takes two to three weeks and sometimes more. In one of my cases the latent tuberculosis lasted one hundred and nine days with the signs and occasional exacerbations of a mild bronchitis associated with a constant fever.

The diagnosis from a mild typhoid is very difficult in the first two weeks. The absence of tumor of the spleen, as well as of the diarrhœa and roseola does not prove anything, because any of these symptoms are often wanting in a mild typhoid. Nevertheless, at the bedside it is always possible if not to diagnose, then to suspect tuberculous fever, as tuberculosis (latent) seldom develops in entirely healthy children, but always after some catarrhal or catarrhal-febrile disease, as whooping cough, measles and influenza.

Typical cases occurring most often have a course as follows: A child who comes from a family with tubercular predisposition, or who suffered in early infancy from rachitis (delayed dentition, began to walk late, was subject to sweats in the first year of life and suffered from repeated diarrhœa and bronchitis, with present marked signs of rachitis on the chest, etc.), falls ill with one of the above-mentioned diseases, for instance, with measles, and begins to improve, but the recovery is too slow; the child has a bad appetite, is languid, as if feverish in the evenings, although the cough almost or entirely disappears.

The physician watches the temperature and discovers that the patient's fever is indeed of the typhoid character. But the fact that this imaginary typhoid did not begin independently, but after measles or influenza, makes it very probable that the cause of fever is tuberculosis. The further course of the disease clears away the doubt even without the subsequent appearance of meningitis, namely, by the too protracted fever, which is uncommon for typhoid. In other cases the diagnosis may be established still earlier, thanks to the ophthalmoscopic examination (tubercles of the choroid).

The fever is of a constant remitting type, as in typhoid, being,

however, *more irregular*. Of especial value are the too considerable and unaccountable elevations of temperature during one or two days. Repeated sweats—nearly every day and night—are also suspicious (it is difficult to produce sweating even artificially in the stage of complete development of typhoid) as well as the complete uselessness of quinine treatment (this circumstance is important for the diagnosis of tuberculosis from malaria, when the former occurs with intermittent fever).

The diagnosis of tubercular fever is not to be held as a proof that the patient is hopeless, as there have been cases of undoubted tuberculous fever which, nevertheless, ended with recovery, especially under the influence of climato-therapy, or after removing from a large city to the country. That such patients are in danger of falling ill with occasional renewed attacks of tuberculosis is conceivable and this, as a matter of fact, is not of rare occurrence in practice. If a child recovers after a fever of two or more months' duration, any local symptom having been absent during all the time of the disease, then we cannot claim that the fever in such a case was produced by the tubercular affection either of the bronchial glands or of other important organs, i. e., by the latent tuberculosis.

During the autumn and winter of 1897-1898 I had the opportunity of observing several cases which led me to believe in the existence of very protracted forms of la grippe, for which the proper name would be chronic la grippe. In typical cases the course is the following: The child falls ill with a mild form of influenza; he has fever, a slight cough, which soon passes away, while the fever sinks, but does not disappear during two, three or four months. Such cases are characterized by a remarkably regular course of the temperature with *very small elevations* which appear usually between twelve and four o'clock. The temperature varies between 98.5° and 99.° in the morning (37°-37.5° C.) to 101° (37.5°-38-3° C.) in the middle of the day and falls toward evening to 98.5° (37° C.). In the period of temperature elevation the patients complain of general malaise, sometimes of slight rigor. As an example here are three temperature charts (Figs. 77 to 79) taken from three children of the same family respectively being five, three and one and a half years of age. Each of them became sick in January, 1898, with a mild fever, snuffles and cough. The

cough was most severe with the youngest child. After two weeks the cough in each child disappeared, but the fever was persistent and lasted up to May. In the given family the history regarding tuberculosis was negative, and it would seem strange to suppose that tubercular fever appeared here simultaneously in all three

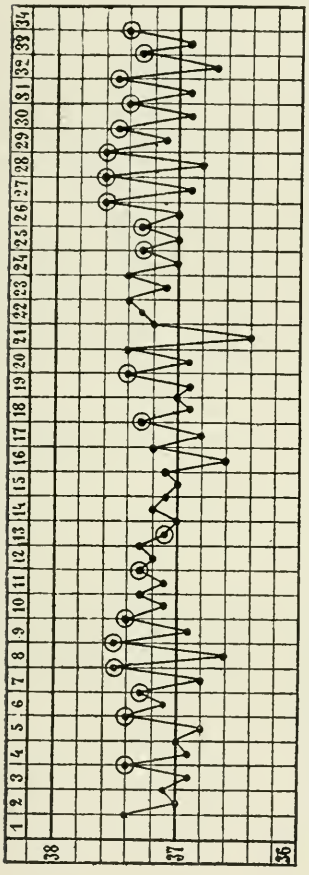
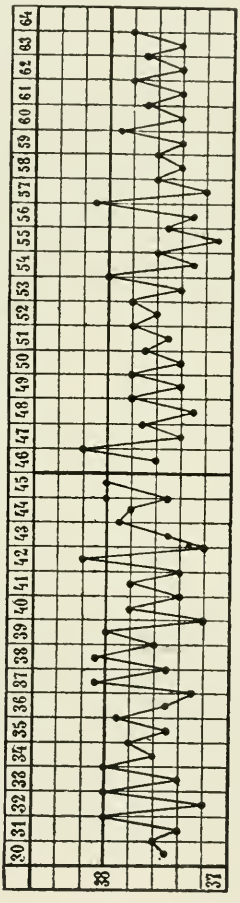


Fig. 80.



Figs. 78-79.

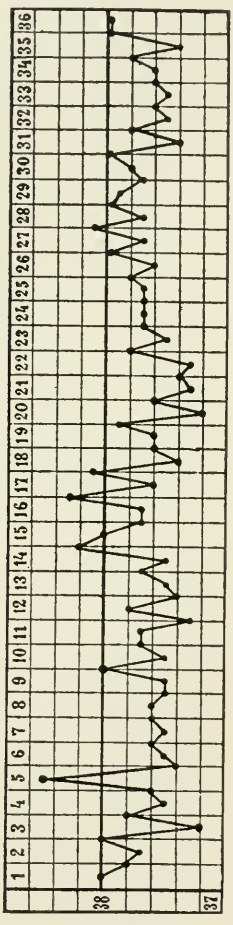


Fig. 77.

children; and besides this the character of the temperature, having been without any high elevations or declines, also was against tuberculosis.

The appetite during such a fever is usually diminished, but

sometimes quite good; the children even eat meat, nevertheless they grow thin and pale, although not confined (the three brothers above mentioned were up during the whole time, i. e., from January to May); the bowels usually are constipated or move regularly; there are no pains in the abdomen; the spleen is usually normal, but sometimes enlarged and palpable. No albuminuria; micturition normal; no snuffles, likewise there is absent a constant headache of which older children usually complain in the period of paroxysms. Some children are prone to severe perspirations which often appear with remarkable regularity at a particular time during the day (about three to five o'clock) preceded by short paroxysms of slight chilliness and still slighter fever.

Here is the temperature chart of a sick boy eight years old (Fig. 80). The rings mark the profuse perspirations, after that there was good feeling which lasted the next day. Other patients do not sweat at all or much less, but complain of indefinite, not very violent, pains in the limbs, increasing on pressure upon the muscles (calves). As a common symptom of all such cases is the *mildness and duration of the fever* in the absence of local causes which would explain it. Such cases we call chronic influenza, especially in view of the ætiology:

(1) The disease often develops in several members of the same family.

(2) In many cases there are in the beginning slight catarrhal signs on the part of the upper respiratory passages.

(3) Adults sometimes become ill simultaneously and then exhibit the common symptoms of la grippe.

Such cases resemble very much mild cases of latent tuberculosis, from which they essentially differ by the epidemic character and favorable termination; but in individual cases, when, for instance, such an influenza arises in a child which is predisposed to tuberculosis (heredity, lately had a purulent pleurisy, chronic bronchitis which especially developed after whooping cough, etc.), the diagnosis cannot be made with certainty, especially because experience makes me believe that chronic la grippe, as well as the acute form, may give rise to the development of tuberculosis in predisposed children; then, of course, the termination of the disease does not decide the question whether tuberculous fever was

present in the child from the very first, or that it was the result of chronic influenza.

I have not looked for Pfeiffer's bacilli in the blood, because I am sure I would not find them. Pfeiffer did not find his microbe in the blood even in typical cases of acute la grippe, but in the sputum he met them many months (about fourteen) after the beginning of the disease, so that the existence of chronic influenza from the bacteriological point of view is entirely admissible.

To the characteristics of chronic la grippe I will add that neither quinia, arsenic, or different antipyretics (phenacetin, antipyrin, sodium salicylate) exhibit a noticeable influence upon the course of the disease. As to quinia I would especially point out that this remedy does not reduce the temperature even temporarily. This fact may prove opposed to malaria in cases running with chilliness and sweats; and negative results of the examination of the blood for plasmodia decidedly exclude malaria.

The disease differs from mild typhoid by the extended duration of its course, but the similarity to typhoid may be very great in recent cases, especially when the spleen tumor is present, and for establishing the diagnosis we often have to resort to Ehrlich's diazo-reaction and Widal's serum test.

[The chronic form of influenza, as described by Filatov, has repeatedly been observed by many authors, as can be gathered from Williams' article, "Influenza in Children," in which he says: "'A form of the disease, until recently too little considered, is the chronic form, first described by Filatov. Cases have since been reported by Lord, Finkler, Wassermann, Ortner and others, where as high as 60 per cent. of cases having chronic cough, for instance, were caused by influenza bacillus, as proved by bacteriologic examination, in many instances it being found in pure cultures."*—EARLE.]

*Jour. Am. Med. Assn., July 4, 1903, p. 29.

DISEASES WITH INTERMITTENT FEVER.

MALARIA.

Intermittent fever—*Febris intermittens*—occurs in children and in adults in regular and irregular forms. The former does not exhibit any difficulties in the diagnosis, because it is characterized by the regular repetition of entirely uniform paroxysms, which consist of chill followed by fever and then by perspiration. Such paroxysms are all but peculiar to this disease alone. The whole paroxysm lasts from four to twelve hours, after which the disease seems to be over and the patient apparently well until the next or the second day, when a new paroxysm sets in at the same hour, etc. Such attacks last an indefinite time, often until the patient abandons a swampy location or until the beginning of quinine treatment. (Figs. 81 and 82.)

Quinine, in doses of as many grains as the patient is years old, administered four to six hours before the paroxysm, stops the latter with certainty especially in acute cases, so that it may be regarded as an agent in determining the diagnosis.

A recent and generally a regular malaria is so typical that it is difficult not to recognize it or to confound it with something else; therefore it is unnecessary for diagnostic purposes to resort in each case to a blood examination for plasmodia. Several times, however, it has happened to me to mistake intermittent for typhoid during the first days of the disease, and for la grippe when the latter was pursuing the form of intermittent fever, as occurred, for instance, in the case mentioned on page 325, where doubt did not last long.

The matter is different in cases of irregular malarial fever, among which we include, first, chronic or old malaria, second, masked fever.

Regarding *chronic malaria*, it is seldom one meets cases where the fever continues every day for several weeks, and not yielding to quinine. One will more often observe the chronicity of the

disease as expressed by frequent relapses of fever (perhaps of not entirely regular intermitting type) which yield to quinine yet return after one or more weeks. In such cases the diagnosis is not difficult; but if, in spite of energetic treatment with quinine, the fever becomes too protracted, the diagnosis is then more difficult,

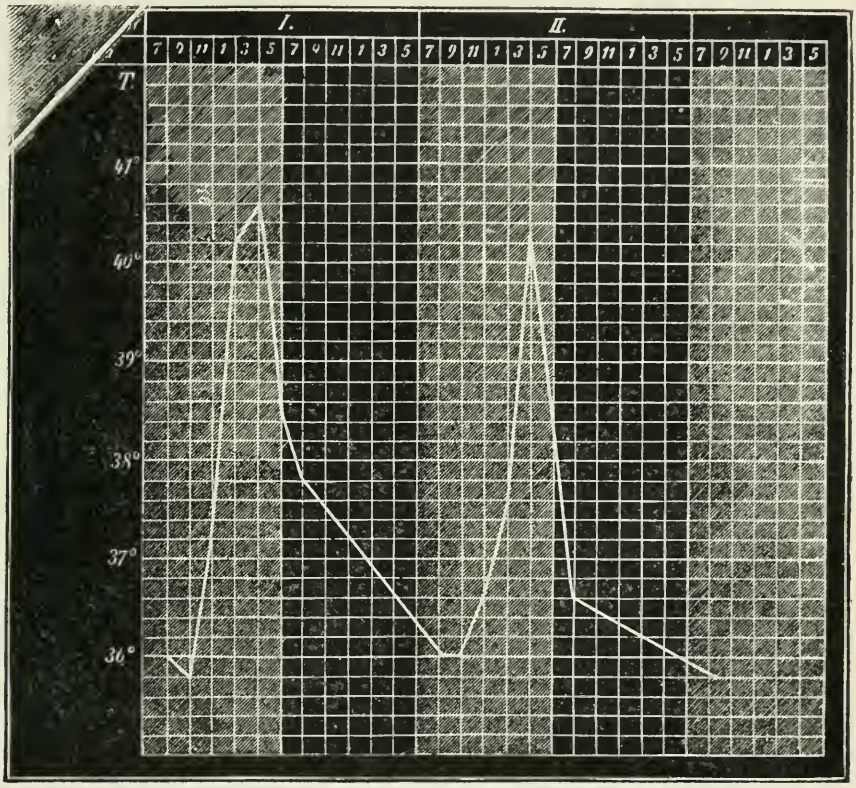


Fig. 81—The temperature curve in intermittens quotidiana (Sahli).

especially because the temperature curve usually loses in such cases the typical character of regular intermittens.

The paroxysms occur either every day, or in different hours of the day, or disappear for one, two or more days and then appear again. The temperature may be very moderate during the paroxysm, but it does not fall to normal during the balance of the day, varying between 99.5-100.5 (37.5°-38° C.); chills and sweats

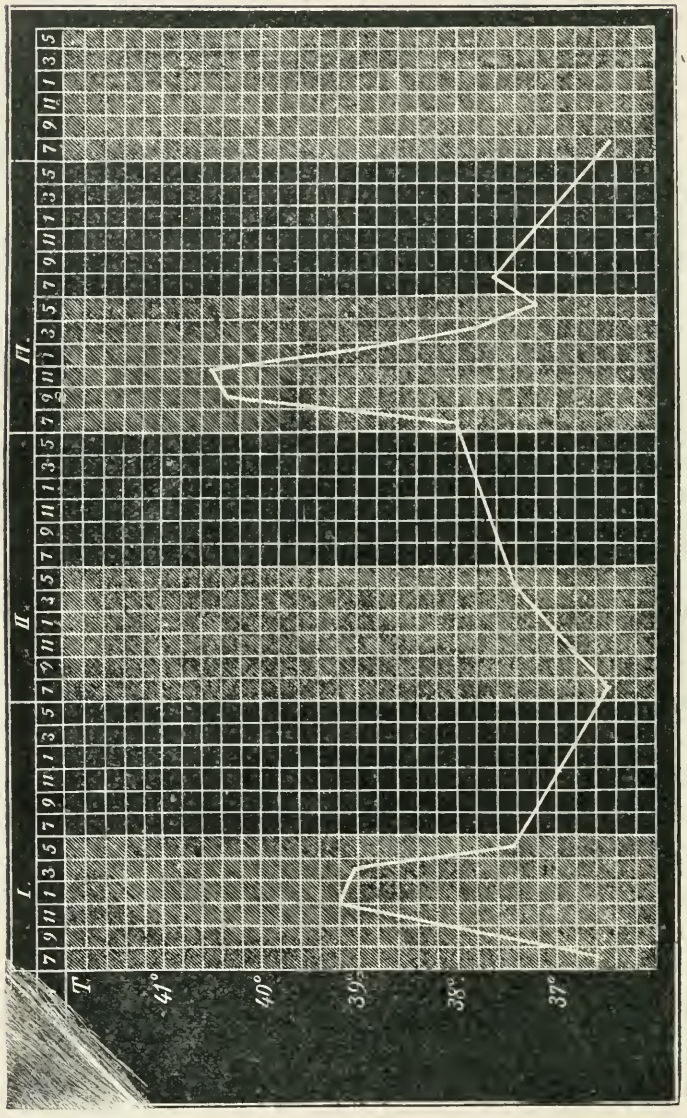


Fig. 82—The temperature curve in febris intermittens tertiana (Sahli).

may here be absent, or both appear only in a very slight form; in general it is almost entirely impossible to make a diagnosis from the temperature alone. In such cases very great importance is attached to *the history,* the *tumor of the spleen* and especially the microscopical examination of the blood for malarial *plasmodia.*

One succeeds in the majority of cases in learning that the patient not only formerly lived in a malarial location but used to suffer from fever in the form of febris intermittens quotidiana or tertiana, which generally yielded quickly to quinia, but that he had frequent relapses, and later the doses of quinia had to be increased and finally this remedy ceased to act altogether.

On examination of the patient a large, solid spleen is to be detected (a very important symptom hardly ever absent) as well

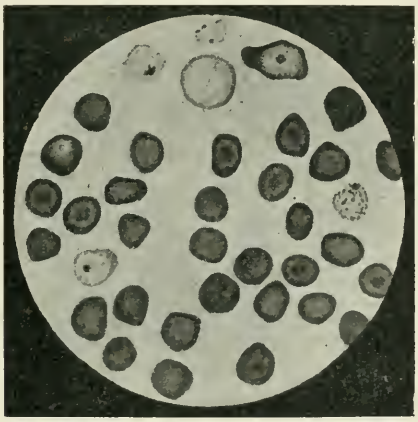


Fig. 83—Malaria—plasmodiæ.

as an enlarged liver. The patient is very anæmic, sometimes one may notice an œdematous swelling of the feet and even ascites. If, despite the protracted fever, there is no noticeable tumor of the spleen, i. e., the latter is not palpable, then this negative sign alone suffices for us to exclude with great probability an old malaria, but we cannot draw an opposite conclusion, because a more or less enlarged spleen may occur also in other cases of fever.

In doubtful cases one must examine the blood by double staining of the specimen with eosin and methylene blue, as described in the section on Anæmia. The plasmodia assume the blue color, appearing as blue clumps sometimes of very irregular shape, occa-

sionally containing granules of black pigment included in the bodies of red blood-corpuscles or they are lying free. The specimens are to be examined by a magnifying power of 500. In some cases there are very many plasmodia, being detected easily, in other cases they are scanty, so that the specimen must be examined a longer time. (Fig. 83.)

The following diseases may be mistaken for a protracted, irregular fever:

(1) *Tuberculous fever* without local affections and with indistinctly developed symptoms. (The character of this fever was mentioned in the preceding section.) Here the chief points in the diagnosis are: the history, the disease beginning with measles, la grippe or whooping cough, absence of the spleen-tumor, negative influence of the quinine treatment. As to the local symptoms, it may be said that fever may be produced by tuberculosis of the abdominal organs (bowels and peritoneum), the lungs remaining usually unaffected, so that a chronic diarrhœa, periodic abdominal pains, or tension of the abdominal walls, may have a great diagnostic value.

(2) *Pyœmic fever* produced by a latent abscess. Pus may accumulate either in a cavity or in a parenchymatous organ. Chronic peritonites and even extensive purulent pleurites may be very long unrecognized (because of an inexcusable negligence). A very protracted fever may also be sustained by purulent synoites and osteites, especially by inflammation of the vertebræ (spondylitis), which sometimes exists without any complaint of pains in the spine (especially in small children) and for some time with paralysis of the lower limbs.

In all such cases it is easy to ascertain the cause of the disease by means of a thorough objective examination of the patient.

In one case of pulmonary abscess I observed, together with Dr. Verevkin, fever of a remarkably regular intermitting type for an entire month. (See p. 328, Fig. 35.) The same may be met with in abscesses of the liver, spleen, etc. One should also give attention to the heart, as intermittent fever may simulate purulent pericarditis and ulcerous endocarditis.

With acknowledgment to Dr. A. A. Sokoloff I present an interesting curve of intermitting fever which he observed in a girl eleven months of age who probably suffered from cerebro-spinal

meningitis. The history of the disease was, in short, as follows: A girl eleven months of age, previously in good health, became ill on the nineteenth of November from fever, vomiting and somnolence; the vomiting (once or twice a day) lasted three days. After that the temperature assumed an intermitting character, which was especially regularly expressed from the ninth up to the sixteenth day. The temperature was for several days at 104° F. (40° C). and then fell to 96.8° F. (36° C.). During the whole period of fever and for a while thereafter the child was very restless, and contraction of the neck, which was hardly noticeable at any other time, appeared. In the period of normal temperature the child was quiet, kept her head slightly bent backward, while one could passively make it straight and even bend it slightly forward. I saw the patient on the twentieth day of the disease. At that time neither hyperæsthesia of the skin, backache, or spleen-tumor could be determined. Quinine and change of surroundings (taken to the hospital) did not exert any influence upon the course of the disease. Finally the patient recovered under an indifferent therapy. (Fig. 84.)

This case is far from being unique. That intermitting cerebro-spinal meningitis occurs only in adults, one can learn from Ziemssen's article in his large manual, where he describes it as a separate form. Not long ago Dr. Kissel demonstrated to the Society of Pediatrics (Moscow) three similar curves taken from meningitis in children of different ages.

Pyæmic fever presents a special likeness to malaria, being often associated with tumor of the spleen, violent chills, sweats and quick changes of temperature from high degrees to the normal level or even to subnormal, and *vice versa.**

(3) *Anæmic fever.*—A considerable and continuous febrile condition sometimes occurs in chlorosis and leukæmia and always during a certain period of malignant anæmia. Recently there have

*In the same category we include fever sometimes lasting several weeks during the period of recovery after inflammation of serous membranes. Such a fever we have met, for instance, after acute peritonitis: the pain having disappeared, as well as the objective signs of exudation, while fever of an almost regular intermitting type lasted three to four and more weeks and at last gradually stopped. Such fevers may probably be referred to resorption fevers, i. e., depending upon the absorption of the remnants of inflammatory products.

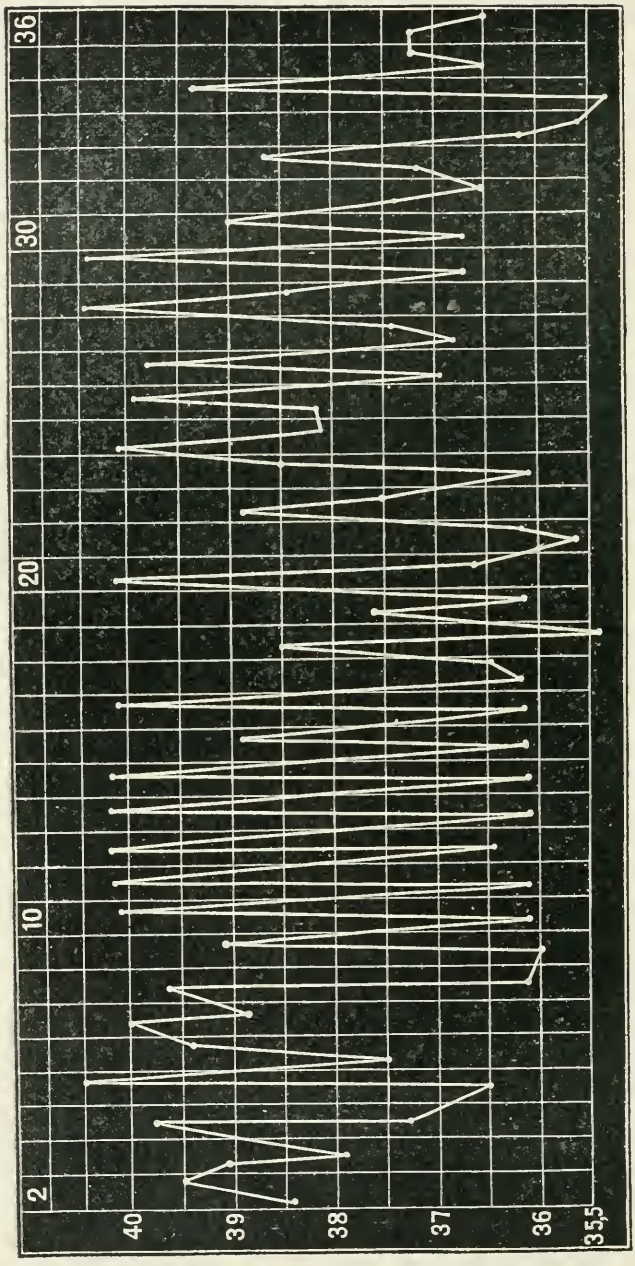


Fig. 84—(Explanation in the text).

been three children in our clinic suffering from different forms of infantile anæmia without local causes and with an elevation of the temperature being noted in each child. As an example I will give the curves for several days.

Pseudo-leukæmic anæmia of Jaksch. V. R., two years and a half of age. Entered the clinic on account of general weakness (cannot walk around), waxy pallor of the face, an immense, solid spleen (the lower edge reaches the iliac bone, the anterior border the umbilicus), enlarged liver (extends three fingers' breadth beyond the ribs); the lymphatic glands are not enlarged; considerable decrease of the amount of erythrocytes with the simultaneous small increase of leucocytes (about one and a half or two times above normal), with a great many eosinophiles. The course of the temperature was as follows: 98°-103.3° (36.7°-39.6° C.); 98.6°-99° (37-37.2° C.); 101.5-102.2° (38.6-39° C.); 100.5-99.6° (37.8-37.6° C.); 98.4-101.3° (36.9-38.5° C.); 99.6-99.5° (37.6-37.5° C.); 100.4-101.5° (38-38.6° C.); 99.5-101.5° (37.5-38.6° C.); 101-102° (38.4-38.8° C.); 100.8-101.5° (38.2-38.6° C.); 98.3-99° (36.8-37.2° C.); 98.3-100-8° (36.8-38.2° C.) and so on during the six weeks' stay in the clinic.

N. Kr., two years and two months old, entered the clinic on February 16, 1902, on account of "pigeon-breast" (pectus carinatum) and other signs of rachitis, but without cough or diarrhœa; the skin very pale; the spleen palpable, extending two fingers' breadth beyond the ribs. The temperature was 100-100.4° (37.8-38° C.)-; 100.4-99.5° (38-37.5° C.); 99.4-100° (37.4-37.8° C.); 100.4°-100° (38°-37.8° C.), etc., during two weeks' sojourn in the clinic. The diagnosis was: Rachitis, splenic anæmia.

I. Pr., one year and nine months of age, entered the hospital with general debility (could not stand), pronounced pallor and markedly developed venous murmurs below the clavicles. There was no rachitis and no tumor of the spleen. Considerable decrease of the amount of erythrocytes in the blood; poikilocytosis and microcytosis; no considerable increase in lymphocytes. No local diseases. Somewhat constipated. The temperature: 99-99-8° (37.2-37.7° C.); 99.5-100.4° (37.5-38°); 99.8-100.4° (37.7-38° C.); 100.3-100.8° (37.9-38.2° C.); 98.6-100.8° (37.-37.8° C.); 99.5-100° (37.5°-37.8° C.); 98.0-100° (37.2-38.2° C.); 99.4-98.6° (37.4-37°

C.); 98.8-100.2° (37.1-37-8° C.), etc., during the five weeks' residency in the clinic.

The diagnosis: *Anæmia simplex gravis* (grave simple anæmia).

It is noteworthy that the urine in all these three cases was pale and of a low specific gravity; in short, it did not resemble fever-urine at all.

(4) *Fever during false leukæmia and sarcoma of the abdominal organs.*—I had the opportunity of seeing in a consultation with Dr. Ivanoff a typical case of an intermittent of three months' duration with considerable febrile condition, in a child nine years of age with a pseudo-leukæmia. The patient was later taken to the hospital, where he died. This post-mortem confirmed the diagnosis of pseudo-leukæmia and did not reveal any other causes of fever.

In sarcoma of the visceral organs the fever is of various types, the most characteristic being that of chronic recurrent fever. This type is characterized by the fact that after several days of normal temperature a more or less considerable fever appears, persisting several days, after which an interval sets in, and so the condition lasts several weeks or even months.

(5) *Nervous fever,* i. e., elevation of the temperature because of a thermic neurosis, sometimes occurs in hysteria. Scherschevsky has described three patients in which, in his opinion, the more or less elevated temperature depended upon a thermic neurosis of the vasomotor center.

In the first case, in a child twelve years of age, strabismus developed after diphtheria, together with paralysis of the uvula and elevation of the temperature up to 106° (41° C.), which lasted for ten days.

In the second case in a nine-year-old, and in the third one in an eight-year-old girl, there appeared for many years, especially under the influence of psychical factors, attacks of fever without any local causes. The following nervous evidences could be observed in both patients: Painfulness of the second left intercostal space and of the left brachial plexus; more or less violent palpitation of the heart and arhythmia; exaggeration of the tendon reflexes; sometimes salivation; sweats and diarrhœa. The

fever would sometimes continue several weeks, and again only two to three days. Quinine and other antipyretics did not produce any influence, while potassium bromide, atropin and inhalations of oxygen gas acted much better.*

Nervous fever occurs either as a constant one, or in the form of separate febrile attacks. The duration of the constant fever varies greatly, from a few days up to many months. The temperature in some cases is maintained very low (100.4°-101.4°) while in others rising up to 104° (40° C.). Somewhat characteristic here is the absence of any type; the temperature quickly ascends, then declines; while in the morning it may be considerably higher than in the evening. Sometimes a difference of a couple of degrees in the temperature may be noticed in different halves of the body. The pulse and respiration often do not correspond to the progress of the fever. Emaciation is often either very slight, or is not to be noticed at all.

In the diagnosis it is of interest to notice that hysterical fever is usually associated with some other hysterical symptoms, thus there may be obtained some likeness to a certain disease (false typhoid, false meningitis, false tuberculosis, peritonitis).

Hysterical fever in the form of separate attacks also sometimes reaches very high degrees (up to 109.4° and more). If the paroxysms occur every day, then malarial fever is simulated. In Prof. Marjeievsky's case the temperature made sudden elevations up to 109.4° (43° C.) and then sank to 84.2° (29° C.).

The diagnosis of hysterical fever is not always easy, requiring a prolonged observation for the purpose of excluding any organic disease. In favor of nervous fever we have the presence of other symptoms of hysteria, absence of a regular type, preservation of the subcutaneous fatty tissue and even increase in the bodily weight in spite of the protracted fever and peculiarities of the urine, which in many cases continues with a low specific gravity.

This form of fever may be distinguished from malaria by the irregularity of the type, by the absence of the splenic tumor and by its not yielding to quinine.

A case may here be described in order to show how difficult it is to discover the cause of fever in an hysterical person even

*"Vratch," 1883. No. 33 and following numbers.

under a long period of observation in a hospital. This case was observed in my clinic and is as follows:

S. N., a girl fourteen years of age, entered the clinic on the twenty-third day of September, on account of pains in the abdomen which occurred especially in the night time. There was nausea after meals and diarrhœa. Her mother died from consumption twelve years before; the father died still earlier from a chronic gastritis. When eight years old the patient had whooping cough, in her ninth year—measles. The patient had been suffering from the abdominal pains and irregular stools, since three years of age. One month ago a tapeworm was expelled with its head, but no noticeable improvement followed.

The present condition: The patient is of fair complexion, with moderately developed subcutaneous tissue, but pale; the spirits seem to be sad, the patient being silent; the appetite is fair, neither eructation nor nausea; the bowels move two or three times in the night time, with pains in the abdomen; no ova of intestinal worms in the dejecta. The genito-urinary organs and those of respiration in normal condition; menstruation not yet established; no albumen in the urine. On the part of the nervous system, besides the melancholic spirits, there is noticed a pronounced *hyperæsthesia of the skin* of the abdomen and of the back; further observation shows that the *hyperæsthesia is very changeable* in its quality as well as in its quantity. Sometimes it *occupies the right side of the abdomen;* pressure on the abdomen produces, together with the pains, a pronounced tension of the abdominal muscles. In case the pains on pressure are limited to one side of the abdomen, the tension of the abdominal muscles is also unilateral. The hyperæsthesia sometimes spreads over the whole surface of the body and over the thighs, at times also over the arms. The vertebral column, especially in its lower thoracic and lumbar regions, is always painful; sometimes there is headache. The sleep is good; no sweats.

The patient remained in the clinic seven months (up to the middle of April), had fever all the time, and left the hospital without any amelioration thereof. The fever was of irregular type, but in the evenings the temperature was always higher than in the morning. The morning temperature would be between 97-98.6° (36° C.), and in the evenings varied between 100.4-102.2° (38-39° C.) and even up to 103.1° (39.5° C.).

It is remarkable that in spite of a persistent fever, which did not cease even for one day, the *weight of the patient increased* very considerably, although having suffered all the time with diarrhœa. The increase of the weight occurred thus: September 23d, 66 pounds; October 7th, 69 pounds; October 22d, 92 pounds; November 10th, 95 pounds; November 25th, 94 pounds; December 21st, 95¾ pounds.

At the end of the month of March the surgeons came to the conclusion that the fever was dependent upon a perinephritic abscess and they decided to make an exploratory incision on the back in order to examine the kidney, notwithstanding the fact that the examination of the abdomen under chloroform did not give any positive results, neither had the fever a pyæmic character (there were no chills or sweats and no enlargement of the spleen). The operation was performed, the kidney examined, and nothing abnormal was found. After the operation the temperature during the first few days remained normal, but after the healing of the wound the patient continued to have fever, pains again appeared in the abdomen, and the patient was discharged without any improvement. One might think that the fever in this instance was of hysterical origin, but I found later that the patient died six months after she left the hospital. The cause of death remained unexplained.

Irregular forms of malarial fever, known as masked fever —febris intermittens larvata, exhibit clinically such diverse features that in the diagnosis not so much the symptoms themselves are important as the regular periodicity of their appearance. But as the periodicity of some symptoms may depend not only upon the malaria, but also upon other causes, occurring in purely nervous, as well as in inflammatory diseases, the periodicity alone is insufficient for an exact diagnosis of masked fever. The diagnosis becomes better established when we have to deal with a patient who has previously suffered from malaria (this disease is usually prone to relapses and in the course of time changes in type often occur, or it becomes converted from a regular form into a masked one) or if a tumor of the spleen can be found. But not very much stress should be placed on this last symptom, because enlargement of the spleen in recent cases of malaria does not always occur and is less likely to be found in irregular, apyretic

forms of malaria. In doubtful cases the matter may be settled by quinine.

Thus, for a correct diagnosis of masked fever two conditions are sufficient: first, the periodicity of some symptoms; second, the possibility of stopping them by means of quinine. And as to the peculiarity of the symptoms themselves, one may say only that there is no one which could be regarded at pathognomonic, i. e., occurring in all cases. For instance, in masked forms there are absent elevation of the temperature and enlargement of the spleen.

Although the last two symptoms make the diagnosis of febris larvata evident, nevertheless this morbid form frequently remains unrecognized; first, because physicians, especially the younger ones, are inclined to take up the symptomatic treatment as early as possible, i. e., without waiting for the diagnosis to be determined, so that the spontaneous intervals are explained by them as the effective action of the remedy given. Secondly, diagnostic misunderstandings may depend on the fact that physicians seem to forget about the extended variety of malarial forms and, when dealing with an enigmatic case of masked fever, do not think of it as such.

Febris larvata (masked fever) occurs in childhood especially often in the form of *periodical diarrhœa,* acute or chronic. Further, we observe it in a form of regularly repeated *pain in the abdomen*—neuralgiæ, (in nurslings—a periodical cry, which differs from hepatic colic—colica hepatica, by, at first, the attacks of violent crying occur only once in twenty-four hours and at the same time, mostly in the night and early hours of the morning; second, by the stool remaining normal in regard to color and consistency, as well as to the frequency; and, third, by the fact that the disease may be easily cut short by quinine) of *nose bleed* and *periodic cough.*

The latter usually occurs in the night in paroxysms lasting several hours in succession and consisting of continually repeated short coughing spells, while the examination of the chest and throat proves negative. In the diagnosis of such cases one must exclude, first, dry pharyngitis; second, the so-called nightly cough, described in the text-books as a neurosis, which resists any treatment, likewise *quinine,* and which after a few weeks disappears by itself; and, third, whooping-cough.

Without enumerating all fantastic forms of masked fever, we will point out only that, in general, it is not difficult to recognize them, if the following conditions be observed:

(1) Always bear in mind intermittent, whatever the symptoms may be, if only they are repeated regularly.

(2) In the very beginning of the disease, when its nature cannot as yet be determined and when there is no necessity to be in a hurry, strong symptomatic remedies should not be resorted to for the sake of making a quick diagnosis.

(3) One should not diagnose intermitting fever on the ground only of the periodicity of the symptoms, but should wait for the results of quinine treatment.

(4) Tumor of the spleen is far from being always present in recent cases of malaria, and since, on the other hand, chronic tumor of the spleen occurs quite often in children (especially in small ones) under the influence of rachitis, this symptom is of diagnostic value only in cases developing, so to say, before the physician's face.

There is yet something to say about *remitting fever*— febris remittens. This name does not signify anything definite. It is used in cases where we have a patient who has fever during many days, even weeks, with the constant rise or fall of the temperature at certain hours of the day, but without any local symptoms which could explain the cause of fever. In brief, remittent fever is not a disease, but merely a symptom, occurring in different diseases. In some cases such an indefinite fever runs with a noticeable tumor of the spleen and ends in from two weeks and a half to three weeks and a half, differing in no particular way from a slight typhoid. In other cases, it lasts longer and may either depend upon tuberculosis, or represent an anomalous form of malaria, etc.

ACUTE FEBRILE DISEASES, CHARACTERIZED BY THE TYPICAL COURSE AND APPEARANCE OF RASH.

ERUPTIVE FEVERS.

First, all diseases of this group, scarlet fever, measles, smallpox, rubeola and varicella, are *contagious;* therefore, it seldom occurs that in a family of several children only one of them becomes sick; usually all, or at least the majority, of them are affected. This fact may occasionally be of great importance in the diagnosis, especially in the initial period of the disease, when the nature of the sickness is in doubt, or in anomalous and rudimentary cases which might remain obscure without a knowledge of ætiological conditions.

Second, according to the contemporary views of science, the virus of these diseases does not belong to the omnipresent poisons, nor occur spontaneously under the influence of the soil, etc., but must be brought in from somewhere, either by the patient or by his belongings, or by a third person remaining healthy. In thickly populated cities it is of course difficult to determine in any individual case the source of a given infection; as such may be a tailor who had brought a new coat from an infected-factory, the milk-women, etc., but in small cities and villages, free from epidemics, the absence of the source of infection may serve as a very valuable fact for the exclusion of any infectious disease as soon as a child falls ill with fever and other symptoms.

Third, all these diseases have the peculiarity of affecting, with very rare exceptions, the person but once in a life time. We use this fact in the diagnosis of doubtful cases, when the symptoms point toward several infectious diseases, especially in the beginning of epidemics; for instance, when one must decide whether the child is sick with slight measles, or rubella (rötheln), medicamentous rash or scarlet fever, etc.

Fourth, peculiar to all contagious eruptions is a *latent period,*

i. e., a certain interval of several days between the time of infection and that of the appearance of the first signs of the disease. This period is called "latent", because it is not expressed by any symptoms. The latent period of some diseases is distinguished by a most certain duration, while in other cases it is more or less indefinite.

To the diseases of the first division may be referred smallpox, in which the latent period covers from nine to eleven days; in measles from the moment of infection until the appearance of the rash thirteen days pass, and nine days up to the appearance of catarrhal febrile symptoms; in varicella the latent period is fourteen days.

To the second class belong scarlet fever, in which the latent period sometimes lasts only twenty-four hours, while in other cases it is protracted up to eleven days; usually it is from three to seven days, and, in general, the latent period of scarlet fever is the shortest one; then rubella with a latent period of fifteen to twenty-one days.

Fifth, all eruptive fevers have a typical course, so that several periods may be distinguished, namely, all of them begin with fever which proceeds without characteristic features—this is the prodromal period; then follows the period of eruption and height of the rash; after that the period of fading of the eruption, and, finally, convalescence.

SCARLET FEVER.

The cardinal symptoms of scarlet fever are rash on the skin, inflammation of the mucous membrane of the throat, and fever.

The scarlatinal rash is of the diffuse character, that is, the whole surface of the skin becomes red, but this redness is never uniform, it always appears small-spotted, marble-like, as the scarlatinal eruption consists of numberless red spots thickly crowded together. These spots are not located on a normal skin, but on a pale-pink ground, which is most readily seen if the skin be pressed by the finger, then, after removing the latter, a pale spot is to be distinguished for a while on the red ground.

In severe cases of scarlet fever with a very pronounced rash the general covering is sometimes so red that no spots are to be detected, the redness becoming diffuse, as in confluent measles.

But it is not difficult at all to recognize the eruption, since neither in measles, nor in scarlatina is the diffuse redness of the skin so generally extensive. This will be realized by the fact that in some regions, especially *on the extremities*, the rash in scarlatina remains marble-like or finely-spotted, and in measles it is large-spotted with interspaces of the normal skin. Confluent scarlatinal rash occurs most often on the back.

Some authors erroneously hold that the scarlatinal rash spares the face; in the majority of cases, directly to the contrary, the skin of the face is changed very peculiarly in scarlet fever, so that this disease is very promptly to be recognized directly from the patient's face, without even undressing him or taking the history. *The peculiarity consists in the pronounced paleness of the lips and of the surrounding skin in contrast with the bright redness of the cheeks.*

Scarlatinal rash on the face is distinguished from the eruption on the body by the fact that the spots are to be seen only on the temples; the cheeks, however, appear diffusely red, simulating the ordinary febrile redness of the cheeks, while the nose, chin and upper lip remain of normal color or even seem to be whiter than usual.

Taking into consideration the definite point that the scarlatinal eruption is of diffuse appearance and that it occupies uniformly the whole body, without there being spaces of normal skin, the young physician may mistake scarlet fever for measles in consequence of finding, in the patient, quite large areas of skin free from the eruption. In order to avoid such an error one should bear in mind that there are many atypical examples of scarlet fever, wherein the rash is of diffuse character only on the body; while on the limbs there may remain large islets of normal skin.

We can formulate the proposition thus:—On those parts where the scarlatinal eruption commonly appears, it is *diffuse*, but it need not be so everywhere; if, however, measles be confluent in some situations, in others it always will appear macular but never *diffuse and small-spotted.*

Scarlatinal rash begins on the neck and upper parts of the chest and back, then *in a few hours* it spreads over the face and the whole body, and by the end of the day it reaches the limbs,

It is most noticeable on the back, and least on the legs and the external surface of the thighs.

The eruption of scarlet fever is sometimes accompanied by an insignificant itching, which is absent in measles.

The essential difference between scarlet fever and measles consists also in the rapid appearance of the rash after the primary elevation of the temperature; in other words, in the shortness of the prodromal period. The scarlatinal rash is *very noticeable even toward the end of the first twenty-four hours from the commencement of the disease,* while in measles the eruption begins only on the fourth day.

The scarlatinal rash also appears on the mucous membrane of the throat and tongue. On the first day of the disease one may sometimes succeed in noting a small spotted area of punctate rash on the soft palate; this rash becomes converted on the following day into a diffuse redness, spreading also over the tonsils.

The tongue in the first days appears coated, but on the third or fourth day it begins to clear off from the top and margins, and after one or two days more it becomes bright-red and covered with considerably swollen papillæ—"strawberry" or scarlatinal tongue. Such a tongue is very characteristic of scarlet fever, but this symptom should not be expected on the very first day; undoubtedly, it may decide the diagnosis of questionable cases of scarlet fever, which run without rash, but with sore throat.

Of the different varieties of rash, among which are distinguished scarlatina papulosa, variegata, petechialis, etc., much practical interest attaches to *miliary scarlet fever*—scarlatina miliaris—which, when widely spread, may markedly change the character of the eruption and cause confusion to the young physician. In the case of miliary scarlet fever covering many parts of the body, but especially on the neck and back, there appear numerous, very thickly-crowded and very small, white vesicles with serous contents. We regard this eruption of particular importance, first, because it occurs very often; second, it is of favorable prognostic significance.

The scarlatinal rash persists three or four days in slight cases; in those more severe, from seven to nine days; and then disappears without leaving any pigmentation. Several days later the desquamation of the skin begins, which is so characteristic that it allows

us to diagnose an old scarlet fever even in the absence of anamneses.

The peculiarity of *scarlatinal desquamation* consists in that the epidermis on the limbs, especially on the fingers, palms and soles of the feet, is cast off in the form of large pieces (is torn away); on the trunk, however, and on the face the desquamation is bran-like, in the form of very small pieces. It begins earliest in cases of scarlet fever with miliary rash (sometimes even before the complete disappearance of the rash); usually the first traces of desquamation appear a few days after fading of the rash, and lasts from two to up four weeks.

The scarlatinal sore throat does not exhibit by itself any peculiarities which could help the diagnosis of the specific fever. *The intensity and character of scarlatinal inflammation of the mucous membrane of the fauces depend upon the severity of the scarlet-fever itself.*

In slight cases a plain catarrhal or erythematous sore throat occurs; in cases of moderate severity—which are in the majority—we find follicular and lacunar sore throats; and in the severest form diphtheritic sore throat obtains; for the appearance of which infection by the diphtheritic poison is not imperative at all, as this form of sore throat is due to the influence of the scarlatinal poison, and not because of a complication.

The diagnostic importance of the throat affections is very great because of their constancy; while an eruption may resemble scarlatina very much, yet in the absence of the sore-throat it is insufficient for the diagnosis.

Fever in scarlatina is usually characterized by a rapid elevation of the temperature in the beginning, by a short fastigium, and by a comparatively slow, not critical, termination. The fever rises suddenly and in a few hours reaches 102.5 to 103° F. (39 to 39.5° C.); during the following days the temperature ascends still higher, and having reached 104 to 105° F. (40 to 40.5° C.) remains at this height up to the fourth or fifth day, and then begins to fall, and after three or four days falls to the normal level. Thus the febrile period lasts about seven or nine days in a case of normal, uncomplicated scarlet fever. Probably, in the minority of cases the fever does not start so suddenly, rising in the first evening to only 101.3° F. (38.5° C.), but later it gradu-

ally increases and reaches its maximum on the fourth or the fifth day. A comparatively slow beginning does not insure or indicate the mildness of the further course. (Fig. 85.)

It is difficult to say how long the fever will last in the case of any complication, because it depends on the peculiarity of the latter. High temperatures are sustained in the beginning mostly by diphtheria of the throat, nose and especially of the ears, as well as by inflammation of the neck glands and of the cellular tissue. Later on, for instance, in the second or third week, the cause of fever may be in a scarlatinal synovitis, pleuritis, peri- and endocarditis and nephritis.

Besides the three mentioned cardinal symptoms, eruption,

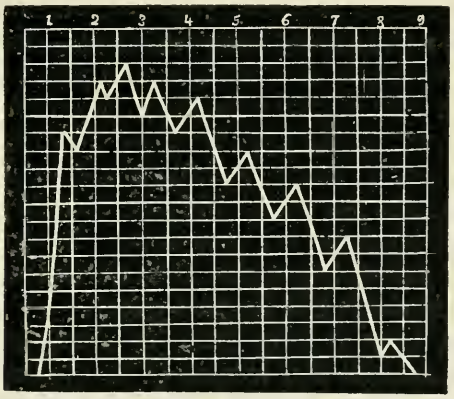


Fig. 85—The temperature curve in scarlet fever. (From Strümpell.)

sore throat and fever, there is one more very constant and, therefore, very valuable symptom in the diagnosis of scarlet fever, namely, *vomiting* in the very first stages of the disease. The vomiting may occur once or, on the contrary, be very persistent (in severe cases vomiting occurs repeatedly ten or twenty times during the first twenty-four hours, and even thirty times; strictly speaking, the persistence of the initial vomiting depends in some way on the severity of the disease: therefore, a very frequent vomiting may be held as a sign unfavorable in regard to the prognosis). It is remarkable that even the most obstinate vomiting seldom lasts more than twenty-four hours.

Vomiting occurs in the beginning of scarlet fever much oftener than in any other acute eruptive disease, including measles, so that in doubtful cases the young physician may look upon initial vomiting as a symptom which strongly points toward scarlet fever and against measles.

The symptoms on the part of the *nervous system* are, in scarlet fever, usually directly proportional to the height of the temperature and to the intensity of the infection; therefore, they are of importance in the prognosis, as *from the degree of the development of nervous appearance one may judge of the greater or less danger of any given case.* In mild cases of scarlet fever which run with slight fever, nervous symptoms may be entirely absent; in cases of moderate severity, which are in the majority, the patient may complain of headache, great weakness and poor sleep during the night; sometimes there is delirium. In severe cases the patient is excited, he does not sleep at night, and in the daytime he is in a half-conscious condition; is sometimes delirious with the eyes open; throws about the bed (he cannot, as it is said, "find rest anywhere"); later on he falls into a state of coma. During the examination the patient becomes excited, grows angry, resists with all his force and even fights. In the most severe cases eclamptic convulsions appear from the first or second day, followed by somnolence and complete coma.

As scarlet fever is often taken by young physicians for measles, one must note that redness of the eye-balls and a discharge of transparent or purulent mucus from the nose often occurs in scarlet fever, especially in grave cases. The essential difference from measles is that in scarlet fever the eyes and the nose become affected after the appearance of the rash; while in measles this occurs from the very first of the prodromal period, or at least one or two days before the appearance of the eruption.

Of the more important complications of scarlet fever there are inflammation of *the joints and nephritis;* and in the presence of these complications a retrospective diagnosis of scarlet fever may be made.

Post-scarlatinal synovitis (synovitis post scarlatinam) is of purulent or serous character. The former occurs only in severe cases of scarlet fever complicated with pyæmia, but serous syn-

ovitis not infrequently complicates the slightest cases. This so-called *"scarlatinal rheumatism"*, like the common form, is characterized by painful swelling of one or more symmetrical joints and by extension of the inflammation from one joint to another.

From an ordinary rheumatism, synovitis scarlatinosa differs especially by its milder and shorter course; the pain often disappears in one or two days under an indifferent treatment. Inflammation of the joints in scarlet fever appears either during the flourishing period of the exanthem or in the stage of desquamation.

Purulent synovites as the result of pyæmia usually occur in fatal cases. Inflammations of the serous membranes generally occur in scarlet fever far oftener than in measles, so that pleuritis or pericarditis are also of importance in the retrospective diagnosis in favor of scarlet fever, while measles is more likely to be complicated by pneumonia.

DIFFERENT FORMS OF SCARLET FEVER.

A normal scarlet fever is characterized by a moderate and proportional development of all symptoms. To the fever of 103.1 to 104° F. (39.5 to 40° C.) there corresponds a universal, bright-red (but without cyanotic tint) eruption and a moderate degree of pain on deglutition because of the accompanying follicular or circumscribed diphtheritic sore throat.

The nervous evidences consist in headache, slight somnolence during the day and delirium at night, but without symptoms of violent excitement; the pulse is frequent, but full; the glands of the neck, although enlarged, remain movable, roll under the fingers, and are painless. The disease begins abruptly, so that usually not only the day, but even the hour, of the initiation of the disease may be determined. First of all the patient begins to complain of a tickling sensation in the throat and of pain on deglutition, but to this very soon is added violent fever and *vomiting*, occurring generally but once. At the end of the first twenty-four hours the rash makes itself evident.

Anomalous scarlet fever may be either slight or severe. The former is characterized by the fact that all cardinal symptoms of the disease, i. e., fever, rash, sore throat, are developed indistinctly; or by the absence of some of the symptoms. Therefore we may

have a scarlatina without fever, scarlet fever without sore throat (very rare form) and scarlet fever without an eruption, which form occurs comparatively often in an adult mother nursing a child with the disease.

Grave scarlet fever is characterized by either a pronounced development of symptoms on the part of the throat and surrounding parts, or by symptoms of general poisoning of the organism; while the malignant influence of the virus is especially evidenced by a very high temperature, failure of the heart activity and by symptoms of oppression or considerable excitation of the central nervous system.

Malignant scarlatina also begins suddenly with vomiting, usually repeated, and violent fever, differing from typical cases in that, first, the temperature in a few hours reaches 105 to 106° F. (40.5 to 41° C.), and, second, in the very early appearance of blunted consciousness. The pulse is much accelerated (160 to 200 beats) and easily compressible; the extremities are cold; the eyes flushed; the pupils contracted. Death from paralysis of the heart may take place on the first day, but oftener it happens on the third or fourth day. If the patient survives the first days, then the fever, remaining high, has insignificant morning remissions; the rash appears slowly, being of violent type. The affection of the throat assumes the diphtheritic character, rapidly spreading to the neighboring parts (nose, ears). Simultaneously the lymphatic glands of the neck become swollen, and the first signs of phlegmon may be detected on the fourth day. The majority of such patients do not survive the seventh or the ninth day.

Severe scarlatina frequently develops without any rash or with what may be termed a rudimentary one.

Regarding the complications of scarlet fever with nephritis and dropsy see the corresponding sections.

The diagnosis of a normal scarlatina, when the rash is well-developed, does not present any difficulties to a person having once noted it; nevertheless, the recent graduate, and especially the student, often confounds this malady with measles It is somewhat remarkable that nobody mistakes measles for scarlet fever, but always the contrary.

The misunderstanding may be explained by the wrong esti-

mation of separate symptoms which are of no decided value, and from ignoring those which are more valuable. For instance, in one case measles was diagnosed because the rash appeared first of all on the face, but not on the neck; but it was not recognized that the center of the face (nose, lips, chin) was free from the rash (this is very important for the exclusion of measles); that the rash appeared after twenty-four hours from the beginning of the disease (and not after three or four days, as is common for measles); and that no cough was present. In another case scarlet fever was taken for measles because the eruption was not everywhere diffuse, and that on the legs and abdomen there remained rather large portions of normal skin, without taking into consideration the diffuse character and the punctate appearance of the rash on those parts where it was evidenced.

In a third case the diagnosis of measles was based upon the points that the patient had a discharge from the nose, flushed eyes and a slight cough, but it was forgotten that all these symptoms appeared later than the rash.

Without enumerating further instances of error, I will say that, in the diagnosis of scarlatina, chief attention should be directed to the following circumstances:—

Ætiology: Are there in the same family patients with the same disease, or were there other opportunities of contracting the sickness?

The prodromal period:—In scarlet fever there are pains in the throat, fever, vomiting, sudden onset, with absence of cough, redness of the eyes and sneezing. In measles we find fever with catarrhal symptoms, sneezing, photophobia, but usually without any vomiting.

The time of eruption:—In scarlet fever it sets in at the close of the first twenty-four hours; in measles after three to four days.

The character of the rash:—In scarlatina it is diffuse, small-spotted, sparing the center of the face; in measles it is large-spotted, and if confluent on some parts, then it is of uniform red color, without any points or marble-like aspect.

As no one takes measles for scarlet fever, the young physician will rarely make a mistake if he regards all doubtful cases as scarlet fever.

A mild anomalous scarlet fever, without sore throat, may be

confounded with different eruptions which are similar to the scarlatinal exanthema. On this account we beg to remark that scarlatina, without sore throat, belongs to such rarities that the diagnosis of such a morbid form is possible only when the source of infection is known, or when in the same family there is another patient with scarlet fever.

If a scarlatinal eruption, without the concomitant sore throat, arises in several members of the same family, and if, accompanied by slight fever and running a typical course, it passes away in two or three days, then it would be a forced interpretation to hold such an epidemic to be an anomalous scarlatina; on the contrary, it would be more within reason to regard it as an independent disease, such as I described in the second volume of my Lectures as *Scarlatinal Rubeola.*

This malady does not produce an immunity to scarlet fever, always differing from the latter by its milder course as well as by the absence of the subsequent desquamation. In some cases, besides the eruption, there may be observed a slight sore throat and a mild fever; in other cases one of these symptoms may be wanting, or both absent and there remains only the rash.

[In his Lectures on Acute Infectious Diseases of Children, Filatov says that he entirely agrees with some of the old authors, as, for instance, Lebert, who accepted two forms of rubella as distinct diseases. One of these is well-known to everybody—*rubella morbillosa,* the other is less known, and even not mentioned—*rubella scarlatinosa.*

'Thus, under the name of scarlatinal rubeola, I understand a genuine, acute, infectious and contagious disease which is characterized by the appearance on the skin of a scarlatina-like rash, but constantly differing from scarlet fever by the mild course, and especially by peculiarities of its virus.

This disease bears to scarlet fever the same relation that a common rubeola does to measles. Its symptoms are identical to those of very mild scarlet fever; the same slightly itching, pale-pinkish, diffuse, not even everywhere, but small-spotted or marble-like rash, especially occupying the trunk and the lateral portions of the face, sparing the nose, lips and chin; the same slight elevation of temperature and very slight redness of the throat. In

the mildest cases sore throat is absent, like in scarlatina sine angina (scarlet fever without angina); as well as fever, the rash being persistent only a few hours. In common cases the disease lasts two or three days. In a few patients in whom I thought I was right in diagnosing scarlatinal rubeola, there was absent the subsequent desquamation.

Regarding the diagnosis of scarlatinal rubeola from scarlet fever, it is based especially on the character of the epidemic and the history (if some one in the family perhaps had scarlet fever), while one should bear in mind that a real scarlet fever sometimes occurs twice or even three times in the same patient, so that one case does not yet prove anything; but if scarlatinal rubeola, or a very mild scarlatina, during any epidemic equally affects those that had and those that had not suffered from scarlatina, then it is very much in favor of the rubeola.

Of separate symptoms in favor of real scarlatina and against rubeola are a distinctly developed scarlatinal sore throat; fever up to 39° C. (102.2° F.) and more, during the first two days of the disease; the same symptoms on the third and fourth days—and the scarlatinal tongue which occurs even in cases of scarlet fever without eruption; and in the second and third weeks the desquamation of the skin on the hands and fingers.

The prognosis is good as in morbillous rubeola."*

Some new literary data confirm Filatov's observations, for instance Pismenny (Russia) had occasion to observe an epidemic of 21 cases of rubeola and noticed that it developed in five different ways. In some subjects the eruption was typical, in others it resembled that of scarlet fever; in 8 cases the eruption was *sui generis*, the single patches much larger than usual, deeper colored, isolated, the intervening skin being normal. In four the exanthem resembled that of scarlet fever, but the catarrh was that of measles; and in 2 there was no catarrh. He often noticed that contagion from a subject with one form frequently induced the disease in another form. He therefore defines rubeola as an independent contagious disease which runs a course similar

*Filatov: *Lectures on Acute Infectious Diseases in Children*, Vol. II., 1887. Moscow, pp. 113-116.

to that of mild measles, but occasionally resembles more closely that of an abortive scarlet fever, and most frequently presents a combination of these two forms.*—EARLE.]

Among other exanthemata which resemble scarlet fever I would particularly mention *sudamina* (sudamina rubra). This disease is very often met with in children younger than two years, above all in rachitics, being very similar to the scarlatinal rash, but only when the latter is not spread extensively, because sudamina never occupy the whole surface of the skin. It is characterized by being confined to definite areas, namely to those which severely sweat; the neck, chest, upper portion of the back, the forehead, and the inner surface of the thighs. A notable differential point is also that the abdomen in sudamina is either entirely free from the rash, or the latter is developed very scantily, while in scarlet fever the abdomen is entirely covered by the eruption, the front, however, comparatively little. Sudamina is marked by its volatility, i. e., it increases (becomes red) by keeping the patient warm, and fades or even vanishes upon exposing him to cold; and so it continues an entire week and even longer, or often returns.

Another eruption also very similar to a limited scarlatinal one occurs in children after rubbing upon their skin different domestic remedies, as olive oil, lard and vaselin. The rash then occupies, of course, only the regions of application of the salve, and if the entire body was rubbed, then it affects only places with a tender skin, as, for instance, the abdomen and chest, but spares the back and outer surface of the limbs. As mothers very often lubricate the child's body in every case of fever, then it may easily happen that an actual scarlatina will appear after such lubricating, when the latter was performed during the prodromal stage of this disease. Thus, one must be very careful touching the history and bear in mind that the artificial rash, produced by oil, never occupies the entire surface of the body, as is usually the case with scarlet fever.

Belonging to the same category of cases are erythemata produced by the internal use of drugs—*dermatitis diffusa medica-*

Medic. Obozrycnic. LIX, No. 7 (Abst. *Jour. Am. Med. Assn.*, 1903, p. 1122).

mentosa. The redness occupies either the entire surface of the skin, or its greater part; in some cases it is uniform, in others small-pointed, as in scarlet fever. The similarity to the latter increases yet more from the observation that, after fading of the eruption, exfoliation of the epidermis occurs in large strips. Persons are met in whom such scarlatina-like erythemata, appear under the influence of very manifold causes, for instance, in each elevation of the temperature, from using different drugs, salves, oils, etc., and therefore, in the histories of some patients it is mentioned that they have several times suffered from scarlet fever. If the diffuse erythema also occupies the face, then the circumference of the mouth and the scalp are usually involved; on the limbs, in contrast with scarlet fever, the rash appears mostly on the extensor surfaces. The mucous membrane of the throat never becomes implicated, so that absence of sore throat serves as a very important aid for the exclusion of scarlet fever (see page 538; medicamentous exanthemata).

Scarlatina, like erythema, often occurs in patients suffering from diphtheria and who are being treated by serum injections.

Erythema in the beginning of pneumonia, and especially prodromal small-pox eruption when a diffuse redness appears on the second day after the fever and vomiting, may also be mistaken for scarlatina; in such instances the redness is not a punctate one, neither does the throat become affected.

Scarlatina without eruption, but with fever and sore throat, may be confounded either with a catarrhal follicular, or with a diphtheritic, sore throat, dependent upon the symptoms in the throat. The scarlatinal character of any sore throat may be suspected if there is scarlet fever in the family. If this is not the case, then in favor of an anomalous scarlatina may be the initial vomiting, punctate redness of the soft palate in the very beginning of the disease and the scarlatinal tongue in its further course. In many cases the question may be settled only by the appearance of a new affection in the same family, or of a characteristic complication, as, for instance, nephritis, dropsy, or desquamation of the epidermis on the fingers or the hands.

Cases of scarlet fever terminating in death during the first twenty-four hours, before the appearance of the rash, may be

taken for acute meningitis, grave typhoid or small-pox. A correct diagnosis of such cases is possible only by the ætiological factors; if, however, the source of infection be unknown, then one can scarcely suppose anything else but indefinite blood poisoning.

MEASLES.

The cardinal symptoms of measles are:—eruption, fever and catarrh of the respiratory passages and eyes. The *rash in measles* decidedly differs from the punctate and diffuse scarlatinal eruption by its scattered macular character. The scarlatinal patient appears from a short distance uniformly red, in measles, however, he appears as piebald.

A single measles spot is, in size, from that of a cherry-stone up to that of a dime (it depends upon how many separate spots become confluent); the whole spot is bright-red; the contour of small points is round. In the center of every spot one may note with the eye, as well as by touch, a small papule of the same redness as the spot itself, so that one may say that the measles spot consists of two parts—of a central papule and of a surrounding red ground. Larger spots which have been formed by the confluence of small ones are distinguished by an irregular outline.

The papulous character of the eruption is distinctly evidenced in some cases, in others but feebly.

In regard to the diagnosis, it is important to point out that, in the beginning, the eruption may consist only of papulæ without any surrounding red ground, so that measles may become very similar to the initial papular rash of small-pox; and if the catarrhal symptoms appear rather late, then to mistake measles for small-pox is possible even for an experienced physician.

Measles becomes evident first of all on the center of the face, i. e., the eruption occupies the nose, lips, chin and the parts of the cheeks in the vicinity of the nose. The initial rash consists not of spots, but of small, quite scattered, reddish papules of the size of a pin's head or larger. The number of papules increases with each hour, and soon a base appears around them. Their bases being very near each other may coalesce, and the rash then becomes more or less confluent (the second day of the eruption);

then the face assumes a diffuse red color and becomes slightly puffy.

Measles spreads from above downwards during three days (thus not so quickly as scarlet fever), so that one can judge of the day of the sickness by the degree of the extension of the rash. It is usually as follows:—On the first day of the eruption, in the morning, there develops a scanty rash on the skin; toward evening the rash increases, extending partly over the upper portion of the back and chest. The next morning the rash on the face reaches its maximum and occasionally becomes confluent. On the trunk a great many papulæ and spots occur; then the eruption begins on the inner surface of the thighs. On the third morning the rash also occupies the lower extremities to the toes, while it begins to fade on the face. The further fading of the rash follows in the same order as it became evidenced.

After the disappearance of the rash exfoliation of the epidermis sets in, more noticeable on the face than on the trunk. The desquamation in measles differs from that in scarlet fever by the fact that the epidermis is never cast off in large pieces, but always in the shape of very small particles (furfuraceous or bran-like desquamation); and again by not affecting the palms and the fingers.

Measles does not produce any itching.

Of anomalies of the rash, important in a diagnosis we must mention *confluent measles*—morbilli confluentes—which might exhibit a confusing association with scarlet fever, if such a confluent measles was to occupy the whole body, but, fortunately, this type of measles almost never occurs. Confluent measles is limited to particular regions, especially the face and the back, and on the other parts a common macular eruption occurs.

Further anomaly may consist in the mode of spreading of the eruption. For instance, the rash having spared the face may appear first of all on the trunk or on some circumscribed part exposed to some irritation (mustard, islets of chronic eczema).

Catarrh of the mucous membranes of the nose, eyes, larynx, and bronchi occurs in measles earlier than the rash, namely, from the first day of fever. The physical examination of the chest during the first days proves negative; the breathing is vesicular, no râles. A dry and frequent cough, snuffles and photophobia lasts

for instance about one week, that is, until the period of the greatest development of the rash, but when the latter begins to fade, the catarrhs resolve, the cough becomes moist and in one or two weeks disappears completely.

The changes of the mucous membranes of the soft palate are very important in the diagnosis. Twenty-four or forty-eight hours before the appearance of the characteristic rash on the face there appears a spotted redness which is typical to such an extent that it allows us to diagnose measles while yet in the prodromal period and such a rash is therefore named—*the prodromal eruption.* Besides the soft palate it is also readily to be noticed on other parts of the mouth, especially on the inner surface of the lips and cheeks, as well as on the eye-lids.

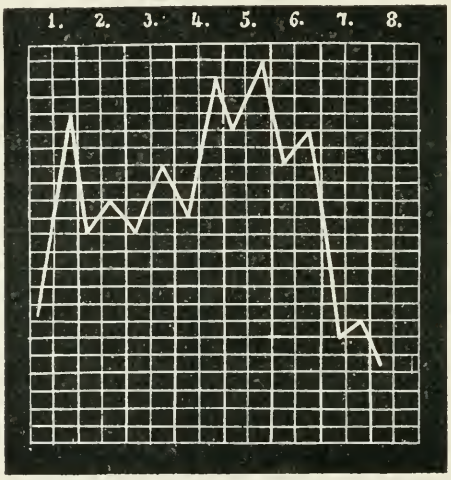


Fig. 86—The temperature curve in measles. (After Strümpell.)

Of the same diagnostic importance is the *bran-like desquamation of the epithelium* of the mucous membrane of the mouth on those areas where the prodromal eruption took place. The smallest scales, resembling bran, are best seen on the inner surface of the cheeks and lips, and then on the gums, seldom on the soft palate.

[More minutely about the prodromal rash in the mouth see the note appended to Morbillous Stomatitis.—EARLE.]

In some, although rare cases, the rash on the mucous membrane of the mouth appears rather late, perhaps occurring simultaneously with the rash on the face or even later, then the absence of the prodromal eruption cannot prove that we have some other disease rather than measles.

The fever in measles is not of a constant type, the temperature curve being in separate cases quite varying. The most typical fever course in measles is that with two maximums and sudden termination after a short fastigium. The first maximum (about 103 to 104° F.) is observed on the first day of the prodromal period, the second one (104 to 105° F.) falls on the first or second day of the eruption; these two are separated from each other by a period of two or three days' duration with comparatively low temperature. (Fig. 86.) In brief, the weaker the attack of measles, the lower is the temperature during the maximums and nearer the normal it sinks during the prodroma and interval. This circumstance may be used in part for the prognosis. The measles fever lasts in mild cases five days; in severe ones seven to nine days.

Varieties of Measles. The prodromal period of typical measles sets in at once with a considerable elevation of the temperature (102.2 to 103.1° F.—39 to 39.5° C.—in the first evening), together with cough and snuffles. In some instances the catarrhal symptoms precede the fever by two or three days; in other cases, vice versa, the fever appears earlier than the cough, so that *absence of catarrhal symptoms during the first day of the disease does not exclude measles.*

On the next morning the temperature falls almost or completely to the normal, the catarrhs remaining unchanged. By the third day the eyes become red and a prodromal rash appears on the palate; the cough increases. On the fourth day the first signs of eruption make themselves evident. On the fifth day the fever increases considerably and the *period of eruption* sets in, to continue three days. On the seventh day the rash on the face fades, the fever declines to the normal point and the catarrhs begin to resolve. A complete convalescence occurs at the close of the second week.

Cases of measles with more or less pronounced deviations from the normal course are described as *anomalous measles.*

Among such may be found, for instance, cases of very mild, so-called, abortive measles, which occur in two varieties, namely as measles without fever and measles without eruption—morbilli apyretici and morbilli sine exanthemate. Both are of very rare occurrence and are indeterminable in sporadic cases, because measles without fever differs in no essential respect from rubeola, nor morbilli without eruption, from bronchitis. In any event, the diagnosis of measles may be established with certainty if one can find a spotted redness on the mucous membrane of the mouth and throat.

Among the anomalous forms one may also include *morbilli without catarrhs.* This form may be readily distinguished from rubeola if there is a bright-red and, in some parts, confluent rash, the temperature being high before and during this eruption (the prodromal fever as well as the bright-red rash are absent in rubeola).

Anomalies of the prodromal period of measles, the further course being normal, occur often; in some cases this period is unusually prolonged (to about six days); in others, it is too short (one or two days).

Among the anomalous forms we also have *grave measles.* Measles may be severe because of the malignant action of the poison, or because of complications. Malignant measles is seldom met with. This form usually has the hæmorrhagic character, especially affecting exhausted and sickly persons. In such cases measles appears as a profound disease from the very commencement. The very high fever shows no remissions in the mornings, and likewise on the second day of the prodromal stage. The eruption develops indifferently and assumes a cyanotic tint. The pulse is small and frequent; the tongue dry and coated with a brown crust; the cough is dry and persistent; and a fatal termination because of heart-failure may result during the very first week.

More often, however, death in measles depends upon complications, of which the chief is inflammation of the lungs. This arises either during the stage of eruption, or after fading of the eruption.

In some cases diarrhœa appears as a dangerous complication of measles, being, in slight forms, a common occurrence in this

disease. The commencement of the diarrhœa generally coincides with the prodromal period. On the contrary, nephritis, so very common in scarlet fever, almost never happens in measles.

Of subsequent diseases miliary tuberculosis is the most dangerous and unfortunately is a very common sequel.

The diagnosis of distinctly developed measles is easy, since the patient exhibits, besides the entirely characteristic rash of this disease, certain pronounced catarrhal symptoms. Diagnostic perplexities may occur, first, in the prodromal period; second, in the commencement of the eruption; and third, in cases of mild measles.

In the very first of the prodromal stage, the patient having fever, cough and snuffles, measles may very easily be mistaken for la grippe; but by the second, or at least, on the third day the differential diagnosis is usually possible, in consideration of the prodromal eruption in the throat and on the lips. If this rash be still absent, then in favor of measles, besides the presence of an epidemic, are the considerable fall of temperature on the second day, a more developed conjunctivitis and frequent sneezing.

In the beginning of the eruption measles may very readily be mistaken for *small-pox*. Usually, or even in the majority of cases, the diagnosis is not difficult, being based upon the prodromal eruption on the soft palate and on pronounced catarrhal evidences (both of which are absent in small-pox); furthermore the rash itself is more of a macular than of a papular character. The question is different if the patient exhibits papular measles with the retarded appearance of catarrhal symptoms, while the prodromal eruption itself is absent. In some cases one must postpone the final decision of the diagnosis until the next day.

The following points must be taken into consideration in such cases:—The rash in small-pox appears more slowly and not at once so intensively as in measles, therefore, *if on the first day of the eruption so many papulæ are on the face that it is difficult to count them,* then it is *in favor of measles.* If the rash occupies not only the face, but the trunk also, then during this stage of the disease (minimum the second day) the following circumstances are important:—

(1) The eruption on the abdomen is in measles as abundant

as on the chest, while in small-pox the abdomen is almost free from the rash.

(2) In small-pox if the rash has already occupied the trunk, one can still find small vesicles on some parts of the face, so that the *complete* absence of vesicles, in the presence of an *abundant* and wide-spread rash, is strongly in favor of measles and against small-pox.

(3) The papulæ in small-pox on the second or third day of the eruption have not yet the red border which is usually present in measles, if not around all papulæ, at least around some of them, therefore, the *eruption in measles becomes unequal.*

(4) The measles-papula is of a brighter color, being of intensive red tint; the small-pox papula, however, is pinkish.

(5) The fever always increases during the eruption of measles (the temperature is higher than it was on the preceding day); in small-pox, on the contrary, the temperature begins to fall.

(6) On touch the papula in measles seems to be far softer, and more delicate than the solid small-pox papula.

It sometimes happens that one will mistake for measles *spotted fever with a profuse eruption*, especially if the latter also occupies the face. The differences are that the eruption in measles is brighter, not being so pale as roseola typhosa, the catarrhal symptoms are in measles more developed, and again, in measles in the beginning of eruption there is almost always to be found a spotted rash on the mucous membranes of the mouth and palate, which *never* occurs in typhus fever; on the contrary, a recent tumor of the spleen occurs only in typhus. If the patient came under the observation of the physician after the first day of the disease, then the diagnosis is still easier, because in measles the rash is first of all on the face and then during twenty-four or forty-eight hours spreads from above downwards; in typhus fever, however, the face does not become affected earlier than the trunk and frequently is not affected at all. If an abundant, pale-pinkish eruption, in the form of small spots, occupy only the trunk and the limbs, *sparing the face, then measles* may be excluded. Roseola typhosa does not become confluent in large spots, so that single spots in typhus fever possess an equal size, while in measles such uniformity of the rash never occurs.

Of the differentiation between measles and scarlet fever see the preceding section.

Confluent measles cannot very well be confounded with scarlet fever, because many regions remain on the limbs which still exhibit the common (piebald) aspect of measles.

Mild measles running with scanty rash, insignificant fever and slight cough, may be mistaken for rubeola (rubella). The chief factor in the diagnosis is the character of the epidemic.

The rash in rubeola usually has the character of the measles eruption, but differs by the more pallid tint. The eruption of rubeola sets in quicker, spreading all over the body in twenty-four hours; while in measles this takes two or three days. The rash in rubeola may be very abundant, but it always remains pinkish. Hence, in the abundancy of the rash; in its pale color; and in the absence (or insignificance) of the fever and catarrhs, are to be found the leading differences between epidemic rubeola and measles. In measles the more abundant the rash the severer is the fever, and likewise the catarrhal symptoms. As to the rash on the soft palate, it is no doubt found in rubeola as well, so that this symptom cannot be used for the differential diagnosis. There is almost no prodromal fever in rubeola, as the rash commonly appears several hours after the beginning of fever; this circumstance is of great diagnostic value. In general, the diagnosis of rubeola may be somewhat difficult only in the beginning of the epidemic, or in sporadic cases.

Mild measles or epidemic rötheln (rubella) may be resembled by *rötheln of non-infectious origin* and non-contagious. The ætiology of such rötheln is not yet clear. Here we have eruptions of different origin, consisting of reddish spots, of the size of a cherry-stone or of a finger-nail, of roundish shape, which disappear under pressure by the finger. Such a rash often coincides with diverse febrile diseases, especially in small children; or it appears as the result of using certain drugs, for instance, quinine, turpentine, etc., and disappears after stopping the same. Such eruptions differ from rötheln and measles by the fever being an independent process, while the rash appears occasionally and lasts only a short time.

SMALL-POX.

Small-pox now belongs to the quite rare diseases of childhood.* Its pustular rash (pocks) is so typical that the diagnosis of this disease is not difficult, so that we can be brief. The beginning of the disease is marked by a sudden fever lasting three days; on the fourth day the eruption of small-pox appears, and from this moment the fever declines. (Fig. 87.)

Among the most constant symptoms of the prodromal period

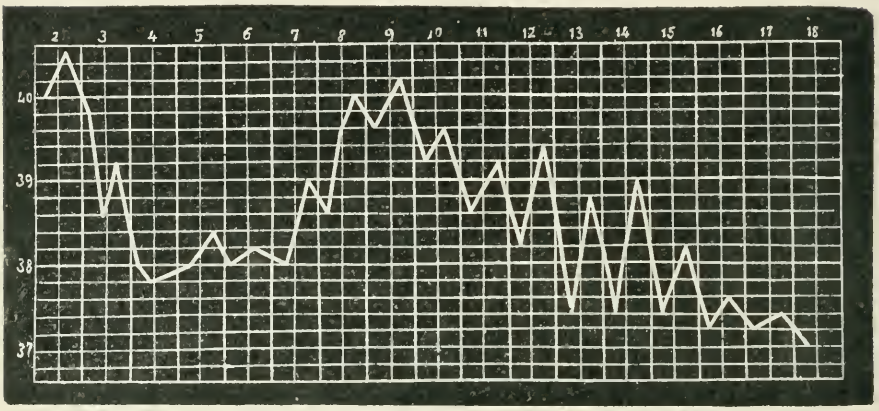


Fig. 87—The temperature curve in small-pox. (From Strümpell.)

are vomiting, headache, constipation, pain in the loins; but all these symptoms are not sufficiently characteristic to indicate small-pox in advance of the appearance of papillæ and pustules. Of more diagnostic weight then is the *prodromal variolous rash*, which may be petechial or erythematous.

*[In a comparative sense this is correct, yet small-pox is very far from being an uncommon disease, especially in the more remote rural districts. Where compulsory vaccination has been faithfully enforced—which obtains in almost all the large centers of civilization—the disease is but seldom observed, but where vaccination laws are either totally absent or inefficiently enforced in such localities small-pox still has a footing and is more or less constantly present.

The United States Public Health Report for the fiscal year ending June 30, 1902, gives a total of 55,857 cases of small-pox in forty-four states and territories of the Union for that year, with 1,852 deaths, being a mortality of 3.31 per cent.

For the preceding year, ending June 30, 1901, there was a total of 38,506 cases reported.—EARLE.]

The former consists of small petechiæ which mostly occupy the lower portion of the abdomen and the inner surface of the thighs; and this localization is held as particularly suspicious of small-pox. About the erythematous rash see the part on Diseases of the Skin.

The stage of eruption in small-pox begins on the fourth day. The rash consists of small, pinkish papillæ appearing first of all on the face, and during the following two days it spreads over the trunk and limbs. Each papilla gradually becomes converted into a pustule which grows larger up to the seventh day and finally assumes the typical form of a flat vesicle with a dimple in its center (umbilication). After the seventh day the contents of the vesicle begin to change to turbid, owing to the admixture of pus corpuscles, and the vesicle then becomes converted into a pustule on the eighth or ninth day. On the eleventh or twelfth day the contents of the pustules begin to dry up, and at this time the patients complain mostly of itching. The severer the small-pox, the later the desiccation sets in and the longer the crusts remain. In cases of moderate severity they fall off toward the thirtieth or thirty-sixth days, frequently leaving round scars—"pittings."

The fever having fallen to normal after the eruption of the rash, relapses again and continues, provided there are no complications, from four to six days.

Varieties of the eruption. According to the degree of development of the symptoms, and to the course of the disease there are noted mild, moderate and severe forms of small-pox. The moderate forms were spoken of above. Among the severe forms we may have

(1) Purpura variolosa.
(2) Variola hæmorrhagica pustulosa.
(3) Variola confluens.

The most dangerous variety is, of course, *purpura variolosa,* which terminates with death even before the appearance of collapse. We must look upon ecchymoses in the skin and hæmorrhages from the mucous membranes as the chief symptoms of this form of small-pox.

Variola hæmorrhagica pustulosa differs from the preceding form by the hæmorrhagic diathesis developing, not in the pro-

dromal period, but during the efflorescence of the papillæ or in the period of formation of vesicles and pustules. Hæmorrhages occur in the pocks themselves as well as in the portions of the skin free from the rash.

Variola confluens is characterized by a thickly-crowded and, therefore, in many places coalescent rash and by a severe febrile condition.

Among the mild forms of small-pox are included variola without eruption or fever, and the diffuse or modified small-pox—*varioloid*.

Variola without eruption is peculiar by the whole course being limited to only the prodromal period, which may obtain with all its features, such as vomiting, pain in the loins, and prodromal efflorescences. This rare variety may be recognized only in the case of the appearance of the petechial rash on the classical regions (inferior portion of the abdomen); in all other instances the diagnosis may be based on ætiological data.

Variola without fever, likewise without eruption, is always a mild disease. About the differentiation of these forms of mild small-pox from varicella see the following article.

With regard to the difference between *varioloid* and variola one can speak only in general; varioloid differs by a milder course, by a shorter duration and the absence of complications. At the end of the first or at the beginning of the second day of eruption the temperature necessarily falls to normal and does not rise again until the very end.

The *diagnosis of variola* may offer perplexities only in the first days of the disease. It is very difficult, and sometimes even impossible, to recognize variola in the prodromal period, especially if the source of infection be unknown. A severe form of variola, beginning with persistent vomiting and convulsions, with following unconsciousness, may readily be taken for *acute meningitis* or cerebro-spinal inflammation, especially if the patient complains of a severe pain in the back and in the neck.

In the presence of a wide-spread, diffuse erythema variola may be mistaken for *scarlet fever*, but, besides the absence of sore throat, the uniform (non-spotted) aspect of the redness will determine the question.

Because of vomiting and high fever, small-pox in its prodromal period may be mistaken for *gastritis acuta*.

In the stage of eruption of the papillæ small-pox may be confounded with measles, varicella and the papular form of urticaria.

I have already mentioned the differentiation between small-pox and measles; therefore, here I will point out only that when it is conjectural whether the patient suffers from small-pox, or measles, then the question is, in the great majority of cases, decided in favor of measles.

In the *papular variety of urticaria* the rash appears as pinkish papillæ in size from a pin's head to that of a dime, extended all over the trunk, face and limbs. The similarity of individual papillæ with pocks (on the first day of eruption) may be striking. Against small-pox in such cases there is also the severe itching, which is always absent in this stage of small-pox.

VARICELLA, (CHICKEN-POX). The eruption in chicken-pox is purely *vesicular* in character, in distinction from small-pox, as a pustular variety. Vesicles, of the size of a pin's head or a pea, are surrounded by a red areola, have a half-spherical form without a central umbilication, and are filled with transparent fluid. These vesicles become developed not from papillæ, as in small-pox, but appear directly on the red ground. For full development they require not days, as in small-pox, but hours. If the vesicles, few as they may be, develop from papillæ, becoming gradually converted after that into pustules, it is then rather a slight small-pox than varicella.

These vesicles either directly dry up, or their contents may before that become turbid; but it never comes to the formation of a pustule healing with a scar, so that no marks (pitting) remain after chicken-pox. The desiccation is accompanied by very pronounced itching.

The number of the vesicles in varicella is as uncertain as in small-pox, and varies from a few, spread here and there on the face and back, up to a great number of them; hence in this respect there is no difference between these two diseases. We cannot say the same, however, regarding the distribution of the eruption. Small-pox most severely attacks the face, the back and the hands, and almost entirely spares the abdomen; on the contrary,

varicella does not select the face, almost always affecting the abdomen.

The essential difference between varicella and variola lies in the course of the *fever*. The former runs either without prodromal fever altogether, or the elevation of temperature begins only several hours before the eruption; while in a slight small-pox there is usually a prodromal fever of two or three days' duration. Further, with the appearance of the varicellous eruption, the fever, in contrast with that of small-pox, not only does not disappear, but even increases, reaching 102.2 to 104° F. (39 to 40° C.) and remains at such a height several days, while new vesicles continue to appear.

APPENDIX.

The differential diagnosis between rubella (Rötheln, German Measles), scarlet fever and measles is given by Bäumler in the following table (*Deutsche Klinik*, 1903, Bnd ii. p. 590):

GERMAN MEASLES.	MEASLES AND SCARLET FEVER.	
Rötheln.	*Measles.*	*Scarlet Fever.*
Incubation period: 17-21 days.	9-11 days.	1-7 days and more.
Prodromal symptoms before eruption: Usually none.	Fever, catarrh of upper air passages and conjunctivæ.	Vomiting, sore throat, fever, rapid pulse.
Eruption appears: First day.	Fourth day.	Second day.
Progression: First on face, upper and lower lips covered with eruption.	First on face; upper and lower lips covered with eruption.	First on neck and upper part of chest, on the face, but the region about the mouth remains free.
Character: Flecks and points, clear red.	Flecks, quickly becoming somewhat elevated; prominence of the skin follicles; blushing color.	Very fine punctate, close together on diffusely red skin. Bright red.
Exfoliation: Slight and in fine scales.	Fine.	On neck and body, fine on hands and feet; often, only after weeks, in large shreds.
Accompanying typical symptoms in throat: Catarrhal redness.	At first red flecks, later general redness (on cheeks, Koplik's spots).	General, marked redness with more or less marked swelling, and sometimes follicular flecks or even membranes — complication with diphtheria.
Respiratory organs: Sometimes mild catarrh.	Severe catarrh, laryngitis, bronchitis, marked disposition to bronchopneumonia.	

Spleen: Somewhat enlarged.	No enlargement.	Enlarged.
Lymph glands: Superficial, cervical, auricular, and other glands enlarged; soft and may be tender.	Not so constant.	Glands enlarged, especially those under angle of jaw, cervical glands; later, as a complication, often with suppuration.
Fever: Often none, or very little, rarely reaching 39° C. (102.2° F.) on the first day.	Three days of prodromal fever. Increase with spread of eruption. Both at maximum at same time.	Highest fever at onset.
Ending: Lysis.	Crisis.	Lysis.
Complications and sequelæ: Generally none.	Bronchopneumonia, otitis media, general miliary tuberculosis, noma, diphtheria, rarely nephritis.	Endocarditis, acute rheumatism, nephritis, otitis media, septico-pyæmia.

THE THERAPEUTIC INDEX.

ABSCESSUS RETROPHARYNGEALIS. Retropharyngeal abscess. Opening and then syringing of the mouth three to four times a day with two per cent. solution of boric acid, or:—

(1)

℞

Saloli,	4.0 (℥i).
Spt. vini,	40.0 (℥x).
Aq. destil.,	160.0 (℥vss).

M.

S.—Syringe the mouth.

[Opening of the abscess may be accomplished through the pharynx or through the lateral region of the neck. In the latter case the incision should be made according to Chiene's proposition, on the posterior margin of the sterno-cleido-mastoid muscle; or according to Burkhardt, on the level of the anterior edge of the same muscle. The first method (Chiene's) is held by some authors as more safe, because it is easier to be performed and recovery sets in quicker.*—EARLE.]

ACUTE FEBRILE DISEASES. The patient should remain in bed; the air should be pure and the bed clean; a cold compress on the head; fresh water or lemonade to drink; liquid diet (soup and milk). In all contagious diseases there should be a strict isolation of the patient.

[For the control of temperature, hydrotherapy, supplemented by small doses of phenacetin or tinct. aconite if needed. If the nervous symptoms are pronounced, bromides—which are well borne by infants—in doses of 5 to 10 grains. A cathartic—preferably mercurial, followed by castor oil—should be administered early.

If pain is present, dry or moist heat—and phenacetin. Avoid

*See Haas: *Beitr. zur Klin. Chir.*, XXII., 3.

the administration of opiates whenever it is possible, as it masks the symptoms and retards elimination. Little food—of fluid nature and copious quantities of water.—EARLE.]

ACUTE RHEUMATISM (ARTICULAR). —*Rheumatismus articulorum acutus.* A very favorable influence, so that sometimes the rheumatism is cut short, is produced by sodium salicylate, antipyrin and phenacetin. Sodium salicylate is given to children in doses of as many grains as the patient is years of age, four times a day, until the pain in the joints, and the fever, subsides; then in half-doses during a few days more. Since the disease is liable to relapses, the patient must remain in bed for at least three days after the complete cessation of the pain. Sodium salicylate is prescribed in powders, wafers or capsules, and also in solution.

(2)
℞
Sodii salicyl., 4.0-8.0 (℥i-℥ij).
Ft. caps. No. 12.
S.—One capsule four times a day (to a child five or ten years old).

(3)
℞
Sodii salicyl., 2.0-4.0 (℥ss.-℥i).
Aq. destil., 90.0 (℥iij).
Syr. rubi idei, 10.0 (℥ijss).
M.
S.—A tablespoonful four times a day (to a child five to ten years old).

[In cases where sodium salicylate is badly borne by the stomach, it can be given in suppositories, or in enemas, for instance:

(4)
℞
Sodii salicylici, 8.0 (℥ii).
Butyri cacao, q. s.
M. f. suppos. No. 6.
S.—One suppositorium every 2 or 3 hours (to a child six years old).

(5)

℞

Acidi salicylici,	
Lanolini,	
Ol. terebinthin, āā	5.0 (℈iv).
Adeps,	40.0 (℥i-℥iiss).
	(*Bourget.*)

M. f. Ung.

S.—Externally.

Besides sodium salicylate, salol, salophen, salipyrin, may be given. Especially salophen is of great benefit, as it does not irritate the stomach and in general does not have the bad complications peculiar to sodium salicylate (nausea, dizziness, ringing in the ears, vomiting, etc.). The dose of salophen is the same as that of sodium salicylate; salophen becomes converted in the intestines into sodium salicylate. The same regarding physiologic and therapeutic properties may also be said regarding *salipyrine*.—EARLE.]

Antipyrin and phenacetin are given in doses one-half the age of the child, also four times a day.

The local treatment consists in painting the affected joints with chloroform, oil and subsequently covering with cotton.

(6)

℞

Chloroformi,	15.0 (℥ss).
Ol. provinciale,	60.0 (℥ij).

M.

S.—Externally.

The same treatment is also of value for acute muscular rheumatism, for instance, in rheumatic torticollis (wry neck), but in connection with massage.

ADENITIS, ACUTE. In acute inflammation of the lymphatic glands, during the first period, a wet compress or a cotton dressing and resolvent ointments:—

(7)

℞

Iodini pur. (metallic)	0.06 (gr. i).
Potass. iodid.,	1.25 (gr. xx).
Lanolini,	30.0 (℥i).

Or

(8)
℞

Hydrarg. biniod.,	0.3 (gr. v).
Vasalini,	30.0 (℥i).

Or

(9)
℞

Plumbi iodid,	
Ol. provinciale,	
Ol. terebinth,	āā 5.0 (℥i gr. xvi).
Emp. plumbi simp.,	25.0 (℥vi).

M. ft emplastrum molle.

S.—Apply on a cloth externally to the swollen glands.

If, notwithstanding this treatment, the skin becomes glossy and pain upon pressure is considerable, in a word, suppuration threatens, then hot poultices of linseed are the best. At the appearance of fluctuation—an incision.

[In acute adenitis ichthyol ointment is also recommended, alone or in combination with potassium iodide ointment:—

(10)
℞

Ichthyoli,	4.0 (℥i).
Vaselini,	
Lanolini,	āā 12.0 (℥iii).

M. f. Ung.

Sig.—Salve.

Or

(11)
℞

Ichthyoli,	4.0 (℥i).
Ung. kali iodidi ad.,	30.0 (℥i).

M.

S.—Externally. —Earle.]

Amygdalitis. See Angina.

Anæmia; Chlorosis. Pure air, exercise; limitation of mental occupation; nutritive diet; moderate quantities of wine (a tea, dessert, tablespoonful of good port wine before meals, three times a day); rubbing the whole body, in the morning and evening, with alcohol or whiskey; sea-air and sea-baths (provided the latter be well borne, i. e., produce appetite and good sleep; however, if the appetite declines under the influence of sea bathing, the sleep becoming restless, and headache and irritability appear, then there are of service baths of warmed sea-water or plain salt-baths).

Of internal remedies the best is iron, especially in chlorosis.

The choice of the preparation depends partly on the condition of the stomach, partly, however, upon the individual views of the physician. If the child can swallow pills, then Blaud's pills are the best, but of modified composition.

(12)
℞
Ferri sulph. cryst.,
Potass. carb. pur. āā 4.0 (℥i).
Gum. tragacanth q. s.
M. ft. No. 30. Consperge lycopod.
S.—Two pills twice a day after meals.

(There is formed in the stomach an easily digestible iron which seems to be better borne *in statu nascendi* than when taken directly as such.)

(13)
℞
Ferri carb. sacch. 0.36-0.72-1.5 (gr. vi-xii-xxiv).
Sacch albi, 2.5 (℈ij).
M. ft. chart No. 12.
S.—Two powders a day.

(This preparation is a mild astringent, therefore, it is contra-indicated when there is some inclination toward constipation.)

Children a half-year old will take 0.03 (gr. ss), older ones 0.06 to 0.1 (gr. i-ij) and more. A still stronger astringent is ferrum lacticum; this preparation is to be recommended in anæmic children, with a disposition to diarrhœa, but one should start with still smaller doses, for instance, a one-year-old child may receive

one-fourth of a grain for a dose about three times a day; a two or three-year-old child, one-third of a grain; those yet older, half of a grain three times a day. In the case of a very persistent diarrhœa it is better to prescribe this drug together with bismuth, and in the beginning even with opium, for instance:—

(14)

℞

Ferri lact.,
Pulv. Doveri, āā 0.18-0.24 (gr. iij-iv).
Bismuth. salicyl,
Sacchari, āā 1.25 (gr. xx).

M. ft. chart No. 12.

S.—One powder three times a day (to a child one to three years old).

In acute diarrhœa iron is contraindicated.

When there is some inclination to hæmorrhage under the skin, or from nasal mucous membrane, then it is better to employ the following:—

(15)

℞

Liq. ferri sesquichlor., gtts. xij.
Aq. dest., 90.0 (℥iij).
Syr. cort. aurant., 12.0 (℥iij).

M.

S.—A dessertspoonful three times a day after meals (to a child three or four years of age). (Approximately as many drops of sesquichloride of iron as the patient is years old.)

As very mild iron preparations, which produce neither constipation nor diarrhœa, at the same time being palatable, are pyrophosphas ferri et sodii, and ferrum pyrophosphoricum cum ammonio citras, which are given to small children under one or two years of age 0.03 (gr. ss) at a dose three times a day, to older children 0.06-0.25 (gr. i-iv).

(16)

℞

Ferri et sodii pyrophos., 0.72 (gr. xij).
Sacchar., 2.5 (℈ii).

M. ft. pulv. No. 12.

S.—One powder three times a day after meals (for a child four to six years of age).

[In cases of chlorosis associated with appearances of grave anæmia Monti recommends:—

(17)
℞

Ferri arsenicosi cum ammonio citr., 05. (gr. viii).
Pulv. rad. rhei, 0.2 (gr. iiiss).
Sacch. alb., 3.0 (ʒi).

M. ft. chart No. 10.
S.—Two to four powders a day.

—Earle.]

For very weak stomachs that do not bear any pharmaceutical preparations, one may recommend this or that iron-water, especially the artificial pyrophosphate of iron-water of Strouve, which tastes entirely like an ordinary Seltzer-water containing gas. This is given to children, as a drink, during breakfast and dinner, from eight up to twelve years, half a bottle a day; to those younger—a quarter of a bottle.

Anæmia of the Brain. If cerebral anæmia depends upon abundant loss of blood (internal or external hæmorrhage), the patient being in a condition near fainting, then the horizontal posture on the back is to be recommended, without pillows under the head and with slightly elevated legs; then fresh air, hot compresses to the head, smelling of ammonia, stimulation internally (Hoffman's drops, valerian drops); in the extremes—subcutaneous injection of the physiological (6.0 to 1000.0 or ʒiss to lbs. iij) salt solution in quantity of 50 to 200 grams (ʒi ʒv-ʒvij).

The slowly-developing anæmia of the brain, due to diarrhœa, requires regulating of the diet (see Intestinal Catarrhs), wine and stimulating (mustard) baths.

Anchyloglossus. If the sublingual frenulum is too short, or is attached near the tip of the tongue, thus preventing its protrusion and the act of suckling, then it is to be cut underneath by scissors. If the frenulum, instead of being a thin, transparent membrane, appears as a thick, fleshy one, then its cutting gives rise to more or less considerable hæmorrhage, and in such in-

stance it is better not to perform the operation except in extreme need.

Angina Catarrhalis. Different forms of sore throat, i. e., acute forms of inflammation of the fauces, angina catarrhalis, follicularis, lacunaris and herpes faucii, pass away in a few days without any treatment. During the period of fever the child must stay in bed. In case of constipation it is well to begin the therapy with a laxative (castor oil, Vienna water, a teaspoonful for little children, for older a dessertspoonful or tablespoonful; or lemonade—to children two or three years of age half a wineglass every two hours if needed; from four up to six years a water glass). For gargling a two per cent. solution of boric acid or sodium salicylate is usually ordered. In doubtful cases, i. e., when the spotted sore throat resembles diphtheria, painting of the fauces with a corrosive sublimate solution (1.1000) may be of service, for instance:—

(18)

℞

Hydrarg. muriat. corros.,	0.05 (gr. i).
Aq. dest.,	50.0 (℥i ℥v).
Acidi tartarici,	0.5 (gr. viij).

M.

S.—Paint the fauces twice a day.

Angina diphtheritica. For the preventive treatment first of all a strict isolation of the patient from healthy persons is necessary. After recovery—disinfection of the room (by formalin or by washing the walls and the floor with a corrosive sublimate solution 1:1000 mixed with five per cent. solution of carbolic acid), of the furniture and all surrounding things (by boiling water). The room of the patient must be light and often ventilated.

Regarding the treatment of the disease itself, at the present time all local and general treatment is of secondary importance, because for the overwhelming majority of cases a subcutaneous injection of antitoxin suffices. The former methods of therapy are of value only in cases where the physician has no possibility of applying serum therapy. The treatment must then be a general and local one. The former consists in administering nutritive diet (milk, eggs, cutlets, bread) and small doses of wine (sherry,

port), for small children younger than three years half a teaspoonful every three hours mixed with equal parts of sweetened water; for older children a teaspoonful or dessertspoonful; brandy is given in half the quantity here mentioned.

The local treatment must be applied chiefly for the purpose of keeping the oral cavity and fauces clean. Older children accomplish this by often rinsing or gargling and by sprayings; in small children syringing of the mouth, as well as wiping of the mouth with a clean linen cloth, together with spraying, are to be resorted to.

In order to make the child rinse the mouth often it is necessary to avoid solutions of bad taste, and to use only harmless substances, as plain boiled water to which boric acid is added (a teaspoonful to a glass of water). Rinsing cleans the mouth, but hardly touches the fauces, especially the deep parts (children cannot gargle), therefore, besides the rinsing it is well to also use steam atomization. For the purpose of better diluting the mucus and saliva which accumulate in diphtheria, alkalies, as, for instance, lime water, are to be recommended.

(19)
℞
Aq. calcis, 30.0 (℥i).
Aq. dest., 60.0 (℥ij).
M.
S.—For atomization.

Or a two per cent. solution of soda.

(20)
℞
Sodii bicarb., 2.0.
Aq. dest., 100.0.
M.
S.—For spraying.

According to the stage of the disease and to the rapidity of the accumulation of mucus, sprayings are to be made in slight cases three times a day; in severe cases every two hours, and even every hour (for a period of two or three minutes). If the child cannot rinse the mouth, then its cleaning, as well as that of the fauces, is performed by syringing; of course non-poisonous sub-

stances are to be used for such cases, because such procedure is necessarily accompanied by the swallowing of some amount of liquid. No special instruments are needed; a common one-ounce syringe is to be taken, then introduced in the mouth of the child in such a way that the end looks upward, toward the hard palate. The stream must be a strong one; then when it meets the hard palate, it is diverted in all directions, thus washing out the whole mouth. One must keep the head of the child rather inclined forwards so as to limit as far as possible any swallowing of the liquid.

For the purpose of acting on the diphtheritic process itself, painting of the throat, although disagreeable to the child, is to be resorted to. Corrosive sublimate in acid solution (1 : 1000) is mostly used by us for this purpose (see page 682 for the prescription).

In very recent cases where the membranes are not yet extensively developed, the disease may be sometimes shortened by painting the tonsils with pure tincture of iodine.

[Instead of pure tincture of iodine the following mixture is to be recommended:

(21)

℞

Iodi puri,	0.06 (gr. i).
Potassi iodid.,	0.12 (gr. ii).
Tr. opii,	1.0 (gr. xvi).
Glycerini puri ad.,	100.0 (℥iii ℥iiss).

M.

S.—Pencil the throat once or twice a day.

The same mixture may be employed for gargling purposes; then one teaspoonful should be used for one glass of water, and gargle every hour.—EARLE.]

If there are excoriations in the throat after separation of the membranes, the painting with pure iodine tincture produces severe burning. To paint oftener than once in twenty-four hours is not needed.

As a domestic remedy turpentine, which may be of value before the physician is called, is to be recommended. Painting the throat with pure oil of turpentine two or three times a day may be of value. If the diphtheria is spreading over the mucous

membrane of the nose it is necessary to keep the surfaces clean by repeatedly (three or four times a day) syringing with the same solutions of lime water or soda as before mentioned.

In severe cases of diphtheria, associated with more or less fever, large doses of oil of turpentine were formerly administered; for children under two years of age half a teaspoonful twice a day; for those older, a dessertspoonful, with the after-drinking of tea or water. For masking the taste and preventing vomiting turpentine is prescribed with ether:—

(22)
℞
Ol. terebinth. gallici, 30.0 (℥i).
Æth. sulph., 1.0 (m. xvi).
M.
S.—Half a teaspoonful to a dessertspoonful twice a day. If diarrhœa, strangury or albuminuria appear the medicine is to be discontinued.

In the subsequent paralyses and anæmia nutritive food, wine and iron are indicated:—

(23)
℞
Liq. ferri sesquichlor.
Glycerin., āā 5.0 (℥iss).
S.—One to ten drops, depending on the age (i. e., one drop for each year) three times a day, after meals.

In the case of spreading of the paralysis the weak galvanic current must be applied to the muscles, and subcutaneous injections of strychnia employed:—

(24)
℞
Strychnin. sulph., 0.03 (gr. ss).
Aq. dest., 30.0 (℥i).
M.
S.—For subcutaneous injection, beginning with fifteen drops.

The serum therapy of diphtheria. At the present time there is scarcely a doubt but that the well prepared blood serum of immune horses possesses marked curative power for diphtheria

There are two points to be remembered for the successful result:—(1) Serum may only influence the case of a genuine (baccillar) diphtheria, and (2) the case must be a recent one (the best results are obtained when the treatment takes place during the first forty-eight hours from the beginning of the disease). Local appearances of diphtheria are influenced even by the late employment of serum, for instance, on the fifth to the seventh day, but at such time the general intoxication is very advanced, and the patient therefore may succumb in spite of the throat becoming clean. The serum is sold in separate bottles, on the labels of which the number of the antitoxic units in a given portion is indicated. In recent cases of moderate severity one thousand units are usually injected; in grave cases, as well as in case of extension of diphtheria into the larynx (croup) 1,500 to 3,000 units of antitoxine are to be injected at once. In cases of moderate severity the injection is repeated after twenty-four hours, if there is no improvement on the part of the temperature (falling to the normal), pulse, habitus of the patient or local conditions. For the injection of the serum syringes of different variety are employed, some requiring sterilization. The injection is made under the skin of the abdomen, chest or inner surface of the thigh. The place of injection is first washed with soap and then with alcohol, afterwards the place of injection is covered with a piece of adhesive plaster. The needle, put into the base of the elevated fold of the skin, is pushed as deeply as possible, the injection being performed by the slow pressure of the piston or bulb (the quick injection of ten to twenty centimeters of liquid into the subcutaneous tissue produces a severer trauma than a slow one).

[In America some physicians (as, for instance, Welch, of Philadelphia, McCollom, of Boston) employ at once much larger doses than is here recommended. Welch injects at once 6,000 units, McCollom 2,000 to 4,000, which dose is repeated after six or eight hours. From a comparison of the health reports of Boston (before and after the introduction of the antidiphtheritic serum), from the comparison of the health reports of other cities, from a study of hospital reports, from a clinical observation of nearly 8,000 cases of diphtheria, McCollom draws the following justifiable conclusions:*

(1) That the ratio of mortality of diphtheria, per 10,000, has been very materially reduced since the introduction of antitoxin.

(2) That the percentage of mortality in the South Department is lower than any of the hospitals taken for comparison.

(3) That, since larger doses of antitoxin have been given, the death rate has been materially reduced, the reduction having occurred in the apparently moribund cases.

(4) That no injurious effect has followed the use of the serum.

(5) That to arrive at the most satisfactory results in the treatment, antitoxin should be given at the earliest possible moment in the course of the disease.

The author concludes his very valuable contribution by recommending the following essentials in the treatment of diphtheria:—

(1) Use antitoxin early—soon as diphtheria is suspected. For immunizing 500 to 1,000 units are recommended.

(2) Curative dose: Where the attack of diphtheria is slight and the patient is treated on the first day of the disease, 2,000 units is invariably sufficient. When treated on second or third day of the disease give 3,000 units. In all cases repeat or double the initial dose if favorable results do not follow within six or eight hours after first injection—no bad results can follow its use. Remember the only danger is in insufficient dosage.—EARLE.]

The horse-serum is not entirely harmless to man. Several days after an injection there sometimes appear diverse erythematous and even petechial eruptions and urticaria. Less frequently there are observed severe pains in the lower limbs (either in the soft parts or in the joints) increasing during movements, as well as on pressure, and compelling the patient to keep immovable positions for several days. These pains may be accompanied by considerable elevation of temperature. As all such complications depend on the serum itself, and not on the antitoxine, one must hold as a great progress in the question of serum therapy of diphtheria the invention of a method of preparing concentrated serum which contains in one gram (xvi grains)

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five hundred units of antitoxine, so that enormous quantities of antitoxine may be introduced without the fear of producing disagreeable sequelæ belonging to the serum. The objection to such a "strong" serum consists in the fact that from long standing the number of antitoxic units decreases; but Behring has recently removed this objection by converting this serum into a powder (exsiccation), one gram of which contains five thousand antitoxic units. Although this powder does contain the salts and the albumens of the serum, nevertheless it may be preserved very well without losing its strength. For preventive injections Behring recommends only one-third of a grain of the powder for 2.5 (℥ii) of water.

Treatment of phlegmonous angina. When the tonsils become considerably swollen and an abscess threatens, then good results are obtained by a scarification of the inflamed tonsils. The improvement is quick and considerable. If the abscess has already formed, it must be opened immediately, by means of a simple puncture, after which a gargle should be employed.

Treatment of ulcerous sore throat. This sore throat, accompanied by the formation of a thick, yellowish-gray exudation on the tonsils, yields to the external and internal use of a two per cent. solution of potassic chlorate:—

(25)

℞

Potass. chlor.,	2.0 (℥ss).
Aq. dest.,	90.0 (℥iij).
Syr. simp.,	15.0 (℥ss).

M.

S.—One tea or dessertspoonful every two hours.

[In cases where potassium chlorate cannot be borne, one may use with great advantage the following solution:—

(26)

℞

Tinct. iodini,	m. xxv.
Natrii (sodii) chlorati,	3.0 (℈ii).
Aq. destil.,	300.0 (℥x).

M.

S.—Gargle three times every hour, while the fluid can be swallowed once each time.

—Earle.]

Aphthæ of the Mouth. See Diseases of the Mouth.

Appendicitis. See Peritonitis.

Articular Rheumatism, Acute. See Acute Rheumatism (articular).

Ascaris Lumbricoides. See Worms, Intestinal.

Ascites especially requires causative treatment (heart-diseases, liver or kidney diseases, general exhaustion due to chronic diarrhœa). In the case of enormous accumulation of fluid which embarrasses the breathing,—paracentesis of the abdomen.

Asphyxia neonatorum. See Death (imaginary) of newborn.

Asthma, Bronchiale. For the purpose of directing treatment to the cause one should look for signs of hyperplasia of the bronchial glands, scrofulosis, rachitis, chronic rhinitis or bronchitis, anæmia and hypertrophy of the tonsils.

In the case of frequent relapses of the disease the bromides are of benefit, for instance:—

(27)

℞

Sodii brom.,	
Potass. brom.,	
Ammon. brom.,	āā 2.0 (ʒss).
Aq. dest.,	120.0 (ʒiv).

M.

S.—A dessertspoonful four times a day (for a child from six up to ten years of age).

Also antipyrin and chloral:—

(28)

℞

Antipyrin,	4.0 (ʒi).

ft. pulv. No. 12.

S.—One powder four times a day (to a child aged six to ten years).

(29)

℞

Chlor. hydrati.	4.0 (℥i).
Decoct. rad. alth.,	90.0 (℥iij).
Syr.,	12.0 (℥iij).

M.

S.—A dessertspoonful every two hours until sleep, or a noticeable amelioration (to a child eight or twelve years old).

Potassium iodid. two per cent. solution.

[Preparations of iodine (potassium or sodium iodide) sometimes act very well in asthma, likewise belladonna and tincture of lobelia. Germain Sée prescribes iodine as follows:—

(30)

℞

Potassii iodidi,	20.0 (℥v).
Syrupi cort. aurant,	200.0 (℥vii).
Syrup digitalis (codex),	200.0 (℥vii).

M.

S.—Two to three teaspoonfuls a day.

Moncorvo recommends the following mixture:

(31)

℞

Aquæ tiliæ,	100.0 (℥iii ℥iiss).
Aquæ flor. aurant,	30.0 (℥i).
Liq. anod. Hoffm.,	1.0 (gr. xvi).
Tr. belladon.,	
Tr. lobeliæ,	āā m. m. v-x.

M.

Sig.—A teaspoonful hourly until the asthma stops.

Jules Simon recommends tonic treatment (Fowler's solution during meals, quinine-wine, tar-water) in connection with belladonna and aconitum:—

(32)

℞

Tincturæ belladon.,
Tincturæ aconiti, āā 8.0 (℥ii).

M.

S.—Four to six drops in the morning, and 5 to 10 drops in the evening, in the intervals between the meals.
—Earle.]

Atelectasis of the Lungs. The treatment of an acquired pulmonary atelectasis coincides with the therapy of capillary bronchitis and catarrhal pneumonia. In congenital atelectasis which manifests itself by stoppage of the respiration and appearances of asphyxia one proceeds as in imaginary death of newborn.

Atrophy of Children (or Pedatrophy) dependent on chronic starvation, but not upon any one definite cause, requires a regulation of the diet in the way of changing the wet-nurse or using additional food, according to the rules. (See Dyspepsia.)

[Barlow's Disease. No medicines are to be given, as they are entirely superfluous, the disease being due to long-continued feeding with boiled milk. Heubner recommends boiling the milk as little as possible, or not to boil it at all. If milk is not well borne, it should be diluted with Mellin's food, Soxhlet's or Liebig's soup-powder, etc.; the bottle in which the unboiled milk is preserved must be kept on ice. Besides milk two or three teaspoonfuls of extracted meat-juice should be given three times a day, for which purpose one must have about ℥ii of beef. Equally often orange-juice may be given, as well as juice of strawberries, cherries, raspberries, etc. Children older than nine months may be given potatoes or any other additional food. Such a treatment always gives good results, while the disease is fatal if not recognized (Heubner).—Earle.]

Basilar Meningitis. See Tubercular Meningitis.

Balanitis, Balanopostitis. Inflammation of the prepuce in children depends on accumulation of smegma around the corona glandis, for the removal of which one must first of all separate the physiological adhesion of the prepuce to the glans,

and then wash the parts with boric acid solution. Then syringe about twice a day under the prepuce with the same solution.

Bladder, Catarrh. See Painful Micturition.

Blenorrhœa of the Eyes in new-born. As a preventive remedy washing out of the eyes of the new-born immediately after birth and applying of two per cent. solution of silver nitrate is to be recommended. If suppuration has already appeared, then in mild cases it suffices to wash the eyes twice daily with three per cent. solution of boric acid; in severer cases one must apply to the eye-lids a ten per cent. solution of silver nitrate and immediately neutralize with a sodium chloride solution.

[Silver nitrate irritates the eyes too much; therefore it is advisable to apply protargol, which contains 8.3 per cent. of silver. This preparation may be employed in a two per cent. solution as drops, and in five to ten per cent. solution for painting the mucous membrane. Dr. Casey Wood recommends a solution of 20 to 40 per cent. The patient does not feel any burning or pain, as happens from applying silver nitrate; only after five or ten minutes a dull pain comes on, lasting from one to three hours. Protargol does not produce necrosis of the cornea, so that this preparation may be applied when there are ulcers on the cornea. The strength of the solution to be applied depends upon the severity of any given case.—Earle.]

Lately Pukaloff has warmly recommended powdering of the inner surface of the eye-lids with calomel, once a day. He thus describes his method of treatment:—"In every child affected with blenorrhœa, in the first or second period of his disease, I wash the conjunctiva carefully with two per cent solution of boric acid by means of a syringe, dry the overflow with absorbent cotton and abundantly apply calomel to the fully everted eye-lids by means of a common brush. Any kind of precaution as to amount of drug is superfluous, indeed it seems the more calomel applied the better. According to the severity of the case I repeat the powdering of the eye twice or thrice, and when after this it is found that the eye-lids are no longer cemented together in the morning I then resort to common astringents."

Blenorrhœa of the Vulva. See Painful Micturition.

Bloody Diarrhœa See Dysentery.

Bloody Urine. See Nephritis.

Bothriocephalus latus. See Worms, Intestinal.

Bright's Disease. See Nephritis.

Bronchial Asthma. See Asthma Bronchiale.

Bronchial Catarrh. In acute forms that start with violent fever and rhinitis (influenza or la grippe) quinine, in as many grains, twice a day, as the patient is years old; and besides this, for the dry cough—resolvent remedies (apomorphin and others —see False Croup) and narcotics, for instance, Dover's powder 0.03 (gr. ss), for each year, in two doses, in the morning and evening; morphium 0.5 (gr. viij) to 25.0 (℥vi) of water, two drops for each year, twice or three times a day), codein, 0.003 (gr. 1-20), to a year, in two doses, for instance:—

(33)
℞

Codeini,	0.15 (gr. ijss).
Sacch.,	2.5 (℈ii).

M. ft. pulv. div. in No. 20.

S.—Two powders a day (to a child three or four years old).

In the period of resolution of the catarrh, and when there is abundant moist râles—senega, anise drops.

(34)
℞

Infus. rad. poligal. senegæ,	1.25-4-0:6.00 (℈i-℥i for ℥ij water).
Liq. ammon. anisat.,	gtts xx.
Syr. ipecac,	8.0 (℥ij).

M.

S.—Half a teaspoonful up to a dessertspoonful every two hours, according to the age.

In *capillary bronchitis* the same mixture, also wine and wet poultices around the whole chest.

[In cases of diffuse bronchitis in children, accompanied by a temperature of 39° C. (102.2° F.) one should endeavor to pre-

vent the formation of capillary bronchitis. The best remedy is, according to Renaut, a *warm bath,* especially if the temperature per rectum is not lower than 39° C. (102.2° F.). If the temperature has not yet reached this point, then one may wait. The temperature of the bath is 38° C. (100.4° F.), and the immersion of 7 to 8 minutes' duration. The head should be covered with a handkerchief and drenched all the time with cold water, especially if there appear signs of hyperæmia. A two or three-year-old child is given, while in the bath, some wine with water. After the bath the child is quickly rubbed with a warm blanket and put into bed. Sometimes even after the third or fourth bath the fever falls and does not rise again. The moist râles begin to decrease and the diffuse bronchitis becomes converted into a mild superficial variety. In other cases the struggle lasts longer (3 to 5 days), but the result is always the same, viz., the bronchitis comes to a standstill and never develops into a capillary one (Renaut).

Simultaneously with baths Renaut advices general treatment in order to keep up the strength of the patient. For this purpose quinine sulph. is the best, especially if the fever is persistent. Renaut always prescribes this preparation in the form of suppositories; for children two years of age there is introduced into the rectum in the morning and evening 0.15 (gr. iiss) of quinin. sulph., or, what is still better, quinin. bromati:

(35)
℞
Quinin sulph. or bromati, 0.9 (gr. xv).
Butyri cacao, q. s.
M. ft suppos. No. 6.
S.—One or two suppositories a day.

In neglected cases, in the presence of very abundant râles, an emetic may be of use. Syrupus ipecacuanhæ is given in such cases in teaspoonful doses every ten minutes. Renaut does not advise, in cases of diffuse bronchitis, even the smallest dose of antipyrine, which is here dangerous because of the depressing effect upon the patient's heart.—Earle.]

[When the diffuse bronchitis is converted into a capillary form, it is advisable, according to Renaut, to begin the treatment

with an emetic (ipecacuanha is the best), but it should not be repeated every day. Here also *baths*, systematically applied, constitutes the most effective treatment. The temperature of the bath should be 95° F. (35° C.), 93.2° F. (34° C.) and 89.6° F. (32° C.), depending upon the severity of the case. Renaut seldom decreases the temperature below 30° C. (86° F.), but, generally, the bath should not be cold, but rather warm. If in one hour after the first bath of a temperature of 95° F. the fever increases further, then the second bath should be given. If two hours after that the temperature is not below 39° C. (102.2 F.), then the temperature of the bath is lowered to 34° C. (93.2° F.). Generally speaking, if the temperature in the rectum when the child has been removed from the bath is found lower by one degree, then one may hope that the period of declination of temperature has begun; in the contrary event, another bath should be resorted to before three hours have elapsed.

At the same time the condition of the heart must be watched; in case of collapse æther sulph. in subcutaneous injections, strophanthus or other heart tonics should be given. To prevent asphyxia from CO_2 poisoning *oxygen inhalations* should be administered in connection with the slightly warm bath, which, according to A. Robin and Binet, increases the absorption of oxygen and the elimination of CO_2. Renaut thinks that the use of the warm and hot baths should be a rule in the treatment of bronchitis in children.—Earle.]

In chronic bronchitis, usually accompanied by rachitis, scrofulosis or anæmia, a general tonic treatment is necessary, according to the indications. Where there is a great quantity of moist râles, inhalations of turpentine are valuable; ten drops of turpentine oil to a bottle of hot water. The patient inhales from the outlet of the bottle for five minutes, three or four times a day. Such inhalations are of especial value in bronchiectasiæ associated with an abundant, fœtid sputum.

[Of drugs Renaut recommends for *chronic* bronchitis *ferrum iodatum* and *strontium iodid*, which are given by him alternately: first ferrum iodid during the first two weeks of each month, and then strontium iodid during the next two weeks. For the prescriptions of syrupi ferri iodati see No. 194.

Strontium iodid may be prescribed as follows:

(36)

℞

Strontium iodid,	2.0 (ʒss).
Syrup cort. aurautiorum,	90.0 (ʒiii).

M.

S.—One tablespoonful to be taken at bed-time.

During the acute stages, in order to act on the convulsive cough, hot baths should be administered, of seven to ten minutes' duration, with the addition of salt (2 kilogrammes—about seven pounds of salt to a bath). After the bath the child should be rubbed dry. In the absence of any fever, such baths are employed three or four times during 24 hours. "This is an excellent remedy against hyperæmia, not only of the mucous membranes, but also of the peribronchial glands." (Renaut).—Earle.]

Bronchopneumonia or pneumonia catarrhalis. As catarrhal inflammation of the lungs is usually accompanied by considerable bronchitis, associated with the accumulation of a large quantity of mucus in the bronchi, the narcotics are not to be recommended. Expectorants and stimulants are here especially indicated:—

(37)

℞

Inf. rad. senegæ, 2.0-4.0 : 90.0 (ʒss-ʒi par ʒiij).	
Liq. ammon. anis.,	gtts. xxx.
Syr. simp.,	12.0 (ʒiij).

M.

S.—A tea or dessertspoonful every two hours.

Or

(38)

℞

Flores benzoes,	0.30-0.60 (gr. v-x).
Sacch.,	2.0 (ʒss).

M. ft. pulv. No. 10.

S.—One powder every two hours (children aged two up to six years).

[Comby, in A. Robin's *Traité de Thérapeutique Appliquée*, describes the treatment of broncho-pneumonia as follows, although we must point out that the lines constitute but a short abstract of Comby's article:—

Every child suffering from broncho-pneumonia should lie in a large room, provided with plenty of air, light, good ventilation and well-heated; if it is possible the patient should be kept during the day in one room and during the night in another. If the child does not have sufficient pure air, then inhalations of oxygen should be given. The body must be kept *clean:* the nurse should often change the linen and equally often wash the face, limbs and the whole body. The posture in bed should often be changed from one side to the other; small children are kept in the arms of the mother or the nurse.

To the nourishment especial attention must be given; sterilized milk, broth, soup, oatmeal, meat-juice, etc., should be especially favored.

In the event of vomiting *nutritive enemata* of milk and pepton are indicated (lukewarm milk ℥ii-℥iiiss, dry pepton ℥iiss, and yolk of one egg). Such enemata are used three or four times a day, preceded by a common enema to clean the bowels.

The *treatment proper* consists of employing *external* and *internal remedies.* External remedies may be called revulsive methods of treatment, as they derive the blood from the internal organs to the skin by reflex action on the latter. These methods consist in applying: (1) *Cupping,* (2) *cataplasmata* and *mustard plasters,* (3) *tincture of iodine,* (4) *spanish fly,* (5) *local and general refrigeration;* cold compresses, cold baths, wet blankets.

Cupping glasses are entirely harmless and they may be applied repeatedly over the whole chest. Dry cupping may be associated with *wet* cupping, then some quantities of blood will be derived from the body, which method is especially recommended in hyperæmic conditions of the lungs, cyanotic face, etc.

Cataplasmata may be made of linseed and act as "local baths" and as "local derivants" by producing redness of the skin. Mustard plaster before being applied is moistened with cold or lukewarm water, applied to the chest and kept there for 3, 4 or 5 minutes; considerable redness of the skin is thus produced and the mustard may be thus applied several times a day.

Tincture of iodine acts as a very mild derivant, being entirely harmless; but, if it be not fresh, then blisters may be formed on the skin.

Spanish fly is of special value when there is one morbid focus

in the lung, rather than dissemination, as is the case in broncho-pneumonia; because of the sores produced by spanish fly Comby is opposed to this method of treatment of broncho-pneumonia in children.

Treatment with cold water is, according to Comby, the best method. Especially recommended are *cold compresses* (*poultices*), which are applied by him as follows:

Linen or gauze is folded eight or ten times, so that a thick compress is obtained; this is immersed in possibly very cold water (22°-29° F.); in the summer time the water is cooled by means of pieces of ice. The compress must be carefully squeezed out, so that water does not drop over the body and on the bed; then it is applied girdle-like around the chest of the child; the wet compress is covered with oiled silk, which in turn is covered with a bandage.

The action of the compress is manifested first of all by shivering of the child at the moment of application; he cries, but the respiratory movements become more frequent and deeper; this alone is good, because the deeper inspirations cause the air to penetrate in the deeper portion of the lungs, thus preventing atelectasis and hyperæmia of the pulmonary parenchyma.

As soon as the compress becomes warm, it should be changed for another one, and the compresses should be changed often, every 20 to 30 minutes, if the desired effect is to be obtained.

Under the influence of cold compresses patients with broncho-pneumonia feel great relief, because they breathe better, have less fever, the flow of blood to the lungs decreases, and the general, as well as the local, condition considerably improves under the influence of this treatment.

Packs in wet blankets (the technique is given in the article on treatment of typhoid fever) act in the same manner as cold compresses, only more powerfully; the revulsion is greater, the nervous irritation abates more decidedly, and refrigeration sets in quicker.

Baths are of much use in the treatment of broncho-pneumonia, being commonly applied by almost every physician; but the temperature should not be reduced at once; it must be lowered gradually by adding to the bath cold water (Bouchard's method). Acting in this way the physician will never do harm to the pa-

tient by administering cold baths, which are a powerful remedy in the treatment of broncho-pneumonia, but they are contra-indicated in cases where the patient is exhausted, his pulse being weak, the heart does not work strongly and there are symptoms of paralysis of the lungs. Of especial value in such cases are warm baths gradually cooled, after Bouchard, or so-called *mustard baths*. To prepare the latter a sack of mustard is taken (150 to 200 grms= ℥v-℥vii) and put first in cold water and then immediately in the bath; the patient should be kept therein about five minutes (average), and may be given the bath several times a day.

Equally good is wrapping the feet in cotton-wool, which produces hyperæmia of the feet, thus deriving the blood from the lungs. At the same time it is advisable to resort to irritating frictions (rubbings) of the body with hot flannel, wet with spirits of camphor, turpentine oil, etc.

Of *internal* remedies tonics and anodynes should be employed. The cough must be treated only when it leads to exhaustion of the patient, deprives him of sleep, etc., otherwise it should not be stopped.

Alcohol is the best anodyne, being prescribed in the form of whiskey, wine, etc. Comby recommends the following mixture:—

(39)

℞

Cognac or rum,	20.0 (℥v).
Syrup quiniæ,	30.0 (℥i).
Tincturæ cinnamon,	1.0 (gr. xvi).
Aq. destil.,	50.0 (℥ii).

M.

S.—One teaspoonful every hour.

Or

(40)

℞

Vini Malacensis	40.0 (℥i ℥iiss).
Syrup cort. aurant.,	20.0 (℥v).
Tincturæ Colæ,	2.0 (℥ss).
Aq. destil.,	10.0 (℥iiss).

M.

S.—A dessertspoonful every two hours.

At the same time tea, coffee and cola should be given, as they favorably act on the nervous system.

If the patient's condition grows worse, the weakness and asphyxia increase, then the best results may be obtained from *subcutaneous injections* of æther sulphuricus (½ to 1 syringe every 3 or 4 hours) which may alternate with injections of *caffein, spartein* and *strychnin,* while *inhalations* of *oxygen* should be at the same time administered in large quantities.

(41)
℞

Caffeini,	2.5 (℈ii).
Natrii benz.,	2.5 (℈ii).
Aq. destil.,	ad. 10.0 (℥iiss).

M.
S.—For subcutaneous injections.

A full syringe contains 0.25 (gr. iv) of caffein; even two or three-year-old children may receive 2 to 3 injections a day.

(42)
℞

Spartein sulphurici,	2.5 (℈ii).
Aq. destil.,	10.0 (℥iiss).

M.
S.—Inject under the skin a full syringe once to three times a day.

(43)
℞

Strychnini sulphurici,	0.01 (gr. 1-6).
Aq. destil.,	10.0 (℥iiss).

M.
S.—One to three hypodermic injections during 24 hours. (A full syringe contains 1-60th of a grain of strychnin.)

If all these remedies prove helpless, prostration and asphyxia being persistent, then hypodermic injections of æther sulphuricus, camphor oil, even of artificial serum after Hayem, must be resorted to.

(44)

℞

Aq. destil.,	1000.0 (lbs. iii).
Sodii sulphurici,	10.0 (℥iiss).
Sodii chlorati,	5.0 (℥iv).

M.

S.—Inject under the skin 10, 20, 30, 50 c. c. of this solution, warmed to 100.5°-104° F.

Regarding the lowering of the temperature it has been mentioned that by applying water it is always possible to diminish the temperature, but hydrotherapeutic measures are not always applicable and not always is it possible to obtain the desired effect. In such cases pharmaceutical antipyretics should be resorted to; and of these the oldest and the most effective is quinine.

(45)

℞

Chinini muriatici or sulphurici,	2.0 (℥ss).
Extr. liquirit,	4.0 (℥i).
Syrup cort. aurant,	20.0 (℥v).
Aq. destil.,	60.0 (℥ii).

M.

S.—One to three (according to the age) tablespoonfuls a day.

(Each tablespoonful contains 0.2 (gr. iiiss) of quinine. To act on the fever one should give during 24 hours 0.1 (gr. iss), 0.15 (gr. iiss) and 0.2 (gr. iiiss) to each year of the child).

If the child cannot bear the mixture, then an enema is made from quinine:—

(46)

℞

Chinini muriatici,	0.25 (gr. iv).
Tincturæ opii,	one drop (gtt. i).
Aq. tepidæ,	60.0-100.0 (℥ii-℥iiiss).

Finally, if one must act quickly, then a hypodermic injection is made:

(47)

℞

Chinini sulphurici or muriatici, 2.0 (ʒss).
Aq. destil., ad. 10.0 (ʒiiss).

M.

S.—To inject one cub. cm. once, twice or three times a day, according to the age.

Next to quinine is antipyrine, which quickly lowers the temperature. The dose recommended by Comby is rather too high: 0.25-0.5 (gr. iv-gr. viii) in twenty-four hours to each year of the child's age. It may be given together with quinine:

(48)

℞

Chinini muriatici, 2.0 (ʒss).
Antipyrini, 2.0 (ʒss).
Extr. liquiric., 4.0 (ʒi).
Syr. menthæ pip., 30.0 (ʒi).
Aq. destil., 60.0 (ʒii).

M.

S.—A teaspoonful every three hours.

Digitalis may also be considered as an antipyretic, but acts especially as a tonic for the heart, therefore digitalis should be prescribed in all cases when the pulse becomes weak and broncho-pneumonia complicated with acute *asystolia* (arythmia). It must be given in large doses and stopped after three or four days to avoid the accumulative action of this remedy. It may be prescribed together with *Aconitus*.

(49)

℞

Tincturæ digitalis,
Tincturæ radicis aconit. spirit, āā 8.0 (ʒii).

M.

S.—Ten drops three times, in a tablespoonful of sugared water or milk.

In grave cases of broncho-pneumoniæ Comby thinks advisable the serum therapy with Marmoreck's antistreptococcus serum (5-10 c. c. as hypodermic injections); this method gave him

good results in some very grave cases. Especially is serum advisable when the streptococcus may be proven as the cause of this disease.

In cases where the disease becomes chronic, the above described treatment should be stopped and a *tonic, anticatarrhal* treatment should be instituted. The less the fever, the more abundant and rich should be the food (milk, eggs, fruits, meat, etc.). Internally *balsamic* remedies are given: balsamum tolutanum, copaiba, cubeba, etc.

One may prescribe, for instance:

(50)
℞

Natrii benzoici,	6.0 (℥iss).
Extr. liquiritiæ,	10.0 (℥iiss).
Syrup tolu,	60.0 (℥ii).
Syrup terebinth.,	60.0 (℥ii).
Syr. bellad.,	40.0 (℥i-℥iiss).

M.

S.—A dessertspoonful three times a day.

Simultaneously the whole body is to be *rubbed,* in the morning and evening, with a piece of flannel wet with *turpentine oil.*

If the *catarrhal* condition does not yield to this treatment, then expectorants (ipecac, senega, apomorphin) should be given (see the prescriptions below).

If broncho-pneumonia be complicated with bronchiectasiæ, offensive breath, then *cucalyptol* or *tinctura eucalypti.*

(51)
℞

Tincturæ eucalypti,	2.0 (℥ss).
Syrupi altheæ,	30.0 (℥i).
Syr. menthæ,	20.0 (℥v).
Aq. destil.,	40.0 (℥i-℥iiss).

M.

S.—A teaspoonful every two hours.

Simultaneously cod-liver-oil is given if the child can digest the same, or if it is badly borne, then phosphate of lime, glycerophosphate of lime (syrup, elixir, etc.), syrupi ferri iodidi, quinine, arsenic, etc., must be given, or mineral water, with arsenic and

iron, and in extreme cases a change of climate should be recommended. Finally, if sclerosis of the lungs prevails, then potassium iodid is given, in moderate doses, during a few weeks or months (0.25-0.5—gr. iv-gr. viii in twenty-four hours).

In the acute stage besides the above-named mixtures the following are of use in broncho-pneumonia in children:

(52)
℞

Sodii benzoici,	0.5 (gr. viii).
Ammonii acetici,	1.5 (℈i gr. v).
Spiritus vini cognac,	8.0 (℥ii).
Mist. gummosa.	
Syr. simplic.,	āā 45.0 (℥iss).

M.

S.—One teaspoonful every hour or two hours.

Stepp recommends bromoform:

(53)
℞

Bromoformi,	m. m. ix-xxv.
Alcohol,	30.0 (℥i).
Aq. vitæ,	90.0 (℥iii).
Syrup simpl.,	10.0 (℥iiss).

M.

S.—A teaspoonful every hour.

A six-year-old child may be given nine drops of bromoform (a day); a twelve-year-old one, fifteen drops. Older children may safely be given twenty up to twenty-five drops. (Adults may take up to ℥ss a day).—Earle.]

Cancer, water. See Noma.

Capillary Bronchitis. See Bronchial Catarrh.

Caput Obstipum. See Torticollis.

Catarrh of the Bladder. See Painful Micturition.

Catarrh of the Larynx, Acute or False Croup. (Pseudo-croup)—*Laryngitis catarrhalis.* Remain in bed; wet poultices to the neck; inhalation of steam (through an atomizer or simply from a tea-pot); of marked value is a *hot foot-bath.*

To give a foot-bath a good-sized vessel of hot water is required (the temperature of the water must be 104° F.) to which a small quantity of mustard is added, or a dessert spoonful of aqua regia (i. e. a mixture of one part of nitric acid and three parts of hydrochloric acid).

(54)
℞
Aq. regiæ, 60.0 (℥ij).
S.—A dessertspoonful for a bath. (Poison).

The feet of the patient are immersed in the water half way to the knees and kept there from twenty to thirty minutes, while hot water is constantly added (so that the temperature of the bath is brought up to 110 to 111° F.). The child is then put in bed, the feet having been dressed in woollen stockings. If necessary the bath is repeated on the following day.

Internally remedies which aid the resolution of the catarrh are to be given, seltzer water with milk, alkalies, apomorphin, ammonia, ipecac. For instance:

(55)
℞
Infus. rad. ipecac., 0.12-60.0 (gr. ij-℥ij).
Ammon. mur., 0.4-0.6 (gr. vij-x).
Syr. simp., 8.0 (℥ij).
M.
S.—A tea or dessertspoonful every two hours (to children from two to six years of age).

Ipecac in small doses aids the secretion of mucus, so that it is placed among expectorant and resolvent remedies; in large doses it is an emetic. As an expectorant ipecac is prescribed in weak, medium and strong infusions; for the first, half-a-grain is taken, for the second, one grain and for the strong, two grains. If vomiting must be produced, then ten grains to one ounce is to be taken. All these infusions are administered, according to the age, from a half-teaspoonful (for children under one year) up to a dessertspoonful at each dose, every hour or two hours, but if we have to do with vomiting then every ten minutes if needed (until the vomiting occurs).

(56)

℞

Inf. rad. ipecac,	0.12:60.0 (gr. ij:℥ij).
Sodii bicarb.,	0.6 (gr. x).
Syr. simp.,	8.0 (℥ij).

M.

S.—Like the preceding.

(57)

℞

Apomorphini mur. cryst.,	0.015 (gr. ¼).
Aq. dest.,	60.0 (℥ij).
Acid. muriat. dil.,	gtts ij.
Syr. simp.,	8.0 (℥ij).

M.

S.—A teaspoonful every hour or two hours (to children three or four years of age).

If apomorphin be introduced under the skin it acts like a strong emetic (1-30 of a grain is sufficient), but, when taken internally, quite large doses are borne. As a moderate dose for a child one twenty-fourth of a grain (gr. 1-24) pro die may be taken, or one one-hundred and twentieth (gr. 1-120) at a dose for each year; for instance, a four-year-old child may be given one-sixth of a grain pro die, to a twelve-year-old, one-half of a grain may be so given.

As apomorphin soon decomposes in alkaline and neutral solutions, and the colorless mixture changes to an emerald-green, we add a few drops of muriatic acid to the whole mixture.

In the case of a frequent dry cough there may be employed, besides the above-mentioned mixtures, narcotics, especially opium, in the form of Dover's powder as well as morphin. The dosage of Dover's powder is referred to in detail in the description of diarrhœa; morphin*, however, requires still greater carefulness. Following the well-known table of dosage of medicaments according to the age, one could hold as the highest dose for children two to three years of age one-sixteenth of a grain for a dose

*The administration of morphin to children under two years old is rarely advisable.

Preference should be given to codeine, Dovers powder or tinct. opii camph. where an anodyne is required.—Earle.

and one-fourth of a grain for a day; from four up to five years one-twelfth up to one-third of a grain, respectively, and so on, but such doses almost necessarily produce somnolency, because children are very sensitive to morphin and, apparently, show a greater susceptibility only to atropin. For sake of cautiousness one should begin with much smaller doses and increase them gradually, for instance:

(58)

℞

Morphin acetici,	0.05 (gr. j).
Aq. dest.,	25.0 (℥iv).

M.

S.—Two drops (for each year) twice or three times a day. Thus, for a five-year-old child ten drops (0.001-gr. 1-60), for an eight-year-old, sixteen drops (0.002-gr. 1-30).

In the case of pronounced laryngeal stenosis an emetic should be given, but it should always be preceded by an abundant drink of warm water.

(59)

℞

Rad. ipecac pulv.,	1.25 (℈i).
Tartari emetici,	0.06 (gr. j).
Aq. dest.,	45.0 (℥ijss).
Oxymel scillæ,	15.0 (℥ss).

M.

S.—A teaspoonful every ten minutes (to a child aged two or three years) or dessertspoonful until vomiting occurs).

(60)

℞

Inf. rad. ipecac, (infus. ¼ horas)	1-0:25.0 (gr. xvj:℥vi).
Syr. ipecac,	10.0 (℥ijss).

M.

S.—To take half of this at once; if no vomiting follows then the other half should be given in teaspoonful doses every two minutes.

When false croup is disposed to return then one must accustom the child to cold water. For this purpose, beginning with the summer, the neck and the body are rubbed every morning with water, the initial temperature of which should be 86° F., and then gradually a temperature of 72.5° F. is reached.

Catarrh of the Larynx, Chronic. Chronic laryngitis usually develops on the foundation of syphilis and scrofula, therefore the corresponding treatment is necessary, as well as the local treatment of the accompanying catarrhs of the nose and naso-pharyngeal cavity.

It is best to paint the laryngeal cavity with a two to three per cent solution of silver nitrate, once a day.

(61)

℞

Argent. nit.,	0.5-0.75 (gr. viij—xij).
Aq. dest.,	25.0 (℥vj).

M.

S.—Paint the larynx once a day.

Catarrh of the Intestines, Acute. See Entero-catarrhus Acutus.

Catarrh of the Intestines, Chronic. See Entro-catarrhalus Chronicus.

Catarrh of the Stomach. See Dyspepsia and Gastritis, acute.

Cephalhæmatoma or bloody tumor of the head requires a conservative treatment.

Cerebral Anæmia. See Anæmia of the Brain.

Cerebro-Spinal Meningitis See Meningitis.

Chlorosis. See Anæmia.

Cholera Infantum. See Summer Diarrhœa.

Chorea minor, or St. Vitus' Dance. *Chorea Minor.*—*Complete rest,* physical and mental, is the necessary condition of successful treatment of chorea; in the case of pronounced chorea the patient must stay in bed until he is able to walk; physical fatigue is not allowed until after the complete stoppage of the chorea; therefore, the patient is not to be allowed to attend school.

The diet must be nutritive, not heavy; the mode of life must be regular; fresh air, etc.

Of pharmaceutical products arsenic is the best; in mild and protracted cases of chorea, in small doses; in graver cases (when the patient can hardly walk or remain upon his feet at all, cannot extend his fingers or carry a spoon to the mouth) then in large doses. In the treatment of chorea with large doses of arsenic we follow the method of Comby. He prescribes arsenic in such large doses (from 0.01 (gr. 1-6) up to 0.04 (gr. 2-3) a day, while the highest dose according to U. S. P. is gr. 1-16 pro dosi) that at the first glance they seem to be entirely improbable; but as a matter of fact children bear, in a majority of cases, such a plan of treatment very well.

Instead of potassium arsenicosum (Fowler's solution), Comby offers arsenic acid as more easily borne by the stomach, and he prescribes the same in the solution of 1:1000.

(62)

℞

Acid. Arsenic.	0.1 (gr. jss).
Aq. dest.,	100.0 (℥iij-℥ijss).

M.

S.—Two teaspoonfuls to six tablespoonfuls of water.

For the first day of the treatment he takes 10 grms. (℥ijss) of this solution (i. e. two teaspoonfuls), dilutes the same by six tablespoonfuls of water and gives a tablespoonful every two hours, ordering a small quantity of milk after each dose of the medicine. On the second day he takes for six tablespoonfuls fifteen grms. of the solution (three teaspoonfuls), on the third day four teaspoonfuls, then five, six, seven, and on the seventh day eight teaspoonfuls. From the eighth day he starts diminishing the dose following the same progression, and in this manner the whole treatment lasts exactly two weeks, during which the patient will take six grains of arsenic!!

In our clinic Comby's method is applied in a somewhat changed manner. To small children (four to six years old) we give, on the first day, only half of a teaspoonful; to older children (ten to twelve years of age) a teaspoonful and by the same quantities we increase the dose daily up to the seventh day, and

then the dose is in the same manner gradually decreased. Our maximum dose will be for small children only three-and-a-half teaspoonfuls (℥iijss), and to older children—seven teaspoonfuls (or ℥vij). In case nausea, vomiting or thin stools appear, we stop for one day, or perhaps two, and then again return to the arsenic, then giving it, however, in somewhat smaller quantities than those which caused symptoms of irritation of the stomach.

We mentioned above that mild, but protracted, cases of chorea are treated in our clinic with small doses of arsenic. In such the same solution of arsenic acid is prescribed (1 :1000) and half a teaspoonful a day is given, diluted by six tablespoonfuls of water, gradually increasing the dose up to one or two teaspoonfuls according to the age. We continue such doses until there is complete relief from chorea and until the general condition is improved, but not longer than two or two and a-half months.

If arsenic be not tolerated even in small doses, then other remedies must be resorted to, according to the indications; thus, if chorea is apparently of rheumatic origin, being accompanied by pain in the joints, then *salicylate preparations* or *antipyrin* should be administered; to children ten or twelve years of age we give both these remedies half a dram daily; to five or six-year-old children, one gram (sixteen grains).

Bromides are not given so much on account of the chorea itself, as for the general irritability of the nervous system. All choreic patients are nervous and irritable, but in some the general nervousness reaches such a degree that the patient cannot control himself; he cries, for instance, when talking to the doctor, does not bear even the slightest remonstrances, sleeps restlessly, etc. Such patients are given bromides as follows:—namely, equal parts of three salts in three per cent solution:—

(63)

℞

Sodii. brom.	
Potass. brom.	
Ammon. brom.,	āā 1.0 (gr. xvi).
Aq. dest.,	100.0 (℥iij-℥ijss).

M.

S.—A dessertspoonful or tablespoonful four times a day.

In marked cases of chorea, when the patient suffers with such insomnia that choric movements do not stop even during the night, then one must combat the insomnia, as a dangerous symptom, inasmuch as death happening in an uncomplicated chorea depends upon exhaustion. Here narcotic remedies are indicated, especially chloral hydrate, a grain-and-a-half at a dose for each year of age; for instance, to a ten-year-old child gr. xvj (1.0) at night; to a five-year-old gr. viij, etc. In case of need the dose may be repeated every hour until the desired action is produced. Then sulfonal may be given (at night as many decigrams —a grain-and-a-half—as the patient has years); or opium, etc. In insomnia and, generally, in cases of severe chorea, warm baths are also of value (97 to 99.5° F.) for fifteen to twenty minutes in the evening.

If pallor of the skin and mucous membranes is pronounced, then *iron* is indicated. Of the numerous iron-preparations we use mostly Blaud's pills:

(64)
℞
Ferri sulphurici.
Potass. carbon. cum tartar, āā 5.0 (gr. xxxv).
Mucil. gum. tragacanth. q. s.
M. ft. pil. No. 40.
S.—Two to five pills to be taken pro dosi twice a day after meals.

Or

(65)
℞
Ferratini 2.0-4.0 (ʒss-ʒi).
Sacch., 25.0 (ʒvi).
M.
S.—Half a teaspoonful, twice a day.

We administer iron in particular to such patients as do not bear arsenic, or who have taken the same for some time.

If the acute symptoms of chorea have subsided and some slight twitchings in the face and extremities remain for a long time,

then we may advise change of climate and traveling. Of internal remedies in such protracted, but slight, cases one may recommend strychnin, for instance, tincture nux vomica, three to five drops, two or three times a day, before meals.

Thus, for the large majority of cases of chorea we recommend arsenic, if possible, in large doses, and if the patient cannot bear them, then in small doses, but not less than one or two teaspoonfuls of the solution of arsenic acid (1:1000) each day; and then iron; and in case of insomnia—chloral hydrate and warm baths.

[Chorea minor is regarded by many authors as an infectious disease caused by the same virus as rheumatism. Therefore they think advisable to treat chorea with anti-rheumatic remedies, viz., salicylates. Mastin, for instance, described in the following way the treatment of this disease: "The bowels are cleared by small doses of calomel, followed by salines if need be, after which the patient is put upon full doses of sodium salicylate, according to age and condition. As soon as the articular or joint tenderness has subsided I begin the use of the syr. ferri iodidi, and push it to the tolerance of the patient, combining with it small doses of liq. potassii arsenitis, which I give continuously until the patient is discharged cured. Should pain or joint tenderness return during the time the patient is under treatment, I substitute sodium salicylate for the iron and arsenic, but return to the latter drugs as soon as the pain, etc., have been brought under control. In obstinate cases these drugs may be given alternately with much satisfaction; of course, the bowels, kidneys and skin must be in active functional condition, for it is through these channels that we must rid the body of the products of inflammation, destructive metabolism, toxins, etc."*)

Other authors see the infectious origin of chorea in the streptococcus which may be demonstrated in the blood of such patients. Preobrazhensky (Russia) obtained fine results in such cases from serum treatment with antistreptococcic serum. A case described by him is very demonstrative: A girl eighteen years of age exhibited a violent form of chorea minor, accompanied by retention of urine, temporary paralysis, aphasia and mental disturbances.

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*_Chicago Med. Recorder,_ March, 1904, pp. 171-172.

As arsenic, chloral and bromides failed to relieve, and as streptococci were found numerous in the blood, treatment with antistreptococci serum was attempted. After thirteen or fifteen injections the symptoms abated and the patient recovered. A slight relapse was cured by Fowler's solution*.—EARLE.]

COLD IN THE HEAD. See Coryza.

COLICA. See Dyspepsia.

CONDYLOMATA CIRCA ANUM. General antisyphilitic treatment and powdering the condylomata with calomel after the previous application of aqua chlori.

CONSTIPATION. See Habitual Constipation.

CONVULSIONS. See Eclampsia.

CORYZA—*snuffles.* In the acute stage a two per cent. solution of cocain.

CRANIOTABES. See Rachitis.

CROUP, FALSE. See Catarrh of the Larynx (acute).

CROUP OF THE LARYNX, TRUE—*laryngitis crouposa.* All remedies (steam, expectorants, emetics) which have been mentioned for false croup, are also of value here, but the subcutaneous injection of diphtheritic antitoxine, as mentioned in the section on diphtheria of the throat, is the best. If antitoxine be not at hand, then mercurial treatment should be resorted to.

Mercurial preparations are given internally, and used externally in the form of a salve:—

(66)

℞

Hydrarg. mur. corrosivi,	0.03 (gr. ss).
Aq. dest.,	180.0 (℥vi).
Syr. simp.,	25.0 (℥vi).

M.

S.—One-half to one teaspoonful every three hours (for a child of one to six years);

*The dose of the serum to be injected is not given in the abstract of Preobrazhensky's article. The abstract is taken from the *Jour. Am. Med. Ass'n.*, 1903, p. 587.

Or

(67)

℞

Hydrarg. chlor. mit., 0.06 (gr. i).
Sacch., 4.0 (ʒi).

M. ft. pulv. No. 12.

S.—One powder every two-three hours.

For external treatment use as an ointment:—

(68)

℞

Ung. hydrarg. cinerei, 8.0 (ʒij).
(for a child four to six years)
12.0 (ʒiij).
(for a seven to ten-year-old child)
ft. dosi No. 12.

S.—The contents of each package to be rubbed in every two hours over different parts of the body.

The treatment by frictions is continued not longer than two or three days, as otherwise poisoning may result in the forms of acute anæmia, collapse, ecchymoses.

If this treatment prove inefficient, then subcutaneous injections in the area of the larynx of two per cent. solution of carbolic acid (one-fourth or half of a syringeful and even a whole syringeful), according to the age, once a day.

If in the case of pronounced laryngeal stenosis an emetic was given, the same may be repeated in the event of a new aggravation. If such means prove to be of no more use, then a pronounced stenosis may require tracheotomy or laryngeal intubation.

Cystitis, or Catarrh of the Bladder. See Painful Micturition.

Death of the New-born (imaginary). In mild cases when the reflexes are preserved and the child reacts to irritation of the skin by respiratory movements, then it suffices to apply cold and hot baths alternately; the child is for a second put up to the neck in a pail of cold water and then for a few seconds into a warm bath (98° F.); after that he is rubbed with a warm cloth. If this does not restore the respiration, then the alternating immersions are repeated until the child is completely revived. One must avoid

too strong rubbing of the infant's body, otherwise extensive irritation will result.

If the asphyxia be complete, and the child does not react upon removing the mucus from his throat, all his muscles being in the condition of relaxation, then artificial respiration is necessary, which is best performed according to Shultze's method. The child is grasped so that the forefingers of the physician are placed under the axillæ, with his face turned to the child's back, the thumbs on the front of the chest, the other fingers are laid across the back; the head of the child is thus sustained by the ulnar edges of the metacarpal bones. The physician thus keeps the child in a hanging posture between his slightly adducted legs, and in order to stimulate the child to an expiration, he raises him, so that when the physician's hands pass the horizontal level, the lower part of the child's body slowly bends toward the upper half; the chest thus becomes compressed and an expiration takes place. In a few seconds the whole procedure is repeated and so it is continued eight to ten times. After that the child is warmed in a bath and, if necessary, artificial respiration is undertaken again. If respiration has been restored to such a degree that the child reacts upon irritation of the skin, then one proceeds as in a mild degree of asphyxia. Lately resuscitation according to Laborde's method has been highly recommended. This method consists in the rhythmical drawing out of the tongue. The latter is grasped by forceps and then, holding its tip by means of a handkerchief, the physician draws it out for a few seconds; after that the tongue is pushed back and again drawn out, the procedure being thus repeated about twenty times per minute. The respiratory movement is stimulated reflexly from the nerves of the tongue to the bulb.

Dentition (difficult). The treatment is symptomatic; if the gums are painful and swollen, then they should be penciled about three times a day with the two per cent. solution of cocain.

Diseases of the Mouth require first of all that the mouth should be kept clean. This may be accomplished in older children by means of rinsing the entire cavity with cool water or with the remedies mentioned below; and in small ones by syringing with a common syringe or by wiping the mouth as far as possible by means of a clean, soft, wet cloth, or, if such a wiping is

painful or produces hæmorrhage from the affected mucous membrane, then a soft brush may be applied.

Useful remedies:—In *thrush* (soor) borax and sodium salicylate (both are equally good): in *stomatitis aphthosa*—sodium salicylate; in *stomacace* (fœtid inflammation of the mouth with ulceration of the gums)—potassium chlorate (quickly acts on the morbid process when used both internally and externally).

[Kissel had very good results in treating stomacace (ulcerous stomatitis) with iodoform, which must be rubbed into the diseased places, while the mouth must at the same time be rinsed with boric acid (3 per cent. solution); in very persistent cases he resorts to curettage with a sharp spoon for the purpose of removing the detritus from the surface of the wound. The operation lasts one minute; an anæsthetic should be used. Carious teeth should be removed*.—EARLE.]

(69)
℞
Boracis veniti, 2.0 (ʒss).
Aq. dest. 100.0 (ʒiij-ʒijss).
M.
S.—Wipe the parts affected with thrush every two hours, and after feeding.

(70)
℞
Sodii salicyl., 2.0 (ʒss).
Aq. dest., 100.0 (ʒiij-ʒijss).
M.
S.—Pencil the mouth (aphthous inflammation) or use as a wash.

(71)
℞
Potass. chlor., 2.0 (ʒss).
Aq. dest., 100.0 (ʒiij-ʒijss).
M.
S.—Rinsing (in stomacace).

In the same solution, or with addition of 10.0 (ʒijss) of

Arch. f. Kinderheilk. Bnd. XXVI, Nos. 1 and 2.

syrup, this remedy may also be given internally, if the child cannot rinse the mouth.

As potassium chlorate is not an entirely harmless remedy and, being taken in large doses, it may cause poisoning because of destruction of the red blood corpuscles resulting in hæmoglobinuria, jaundice, collapse, vomiting, cyanosis, etc., therefore one must be careful with the dosage of this medicine and not give to children more than five grains a day for each year (for an adult the maximum dose per day is 8.0 (ʒij).

Of the above-named mixture, for instance, a dessertspoonful may be given to a five-year-old child every two hours; to a two-year-old child, a teaspoonful, but not on an empty stomach.

Diarrhœa, Bloody. See Dysentery.

Dropsy of the Abdomen. See Ascites.

Dropsy of the Testicle. See Hydrocele.

Dysentery—(*dysenteria or enteritis follicularis*).

This disease requires a strict diet. Older children should not be given meat or bread, but only liquid food and in small quantities, for instance, milk and soup in dessert or tablespoonful doses.

The treatment begins with a laxative; a nursling should be given a teaspoonful of castor-oil; a two or four-year-old child a dessertspoonful, or the following mixture:—

(72)

℞

Ol. ricini,	10.0 (ʒijss).
Aq. dest.,	80.0 (ʒij-ʒijss).
Mucil. acaci., q. s. ft. emulsio.	
Syr. simp.,	10.0 (ʒijss).

M.

S.—A teaspoonful every hour until a fæcal stool appears (to a child five to eight months old).

(73)

℞

Hydrarg. chlor. mit.,	0.18 (gr. iij).
Sacch.,	2.0 (ʒss).

M. ft. pulv. No. 9.

S.—A powder every hour until the appearance of an abundant stool (to a child six to twelve months old).

Calomel is very much used in pediatric practice either as a laxative, or as an antiphlogistic remedy. In the former case it is given in comparatively large quantities; to a nursling 0.015 to 0.008 (gr. ¼ to gr. ⅛); from two to four years 0.03 (gr. ½); and to older children a grain every hour if needed. As an antiphlogistic it is prescribed in doses of 0.003 to 0.006 (gr. 1-20 to gr. 1-10). In children having teeth a continued (a few days) administration of this remedy may be the cause of severe ulcerous inflammation of the mouth, to prevent which it is advisable to recommend conjointly with the calomel a thorough rinsing of the mouth with potassium chlorate solution.

After the action of the laxative opium may be given in a mucilaginous or oil-mixture.

(74)
℞

Decoct. salep,	60.0 (℥ij).
Tr. opii.,	gtts. v.
Syr. simp.,	10.0 (℥ijss).

M.
S.—A teaspoonful every two hours (to a child one or two years of age).

(75)
℞

Ol. amygdal. dulc.,	10.0 (℥ijss).
Aq. dest.,	60.0 (℥ij).
Mucil. gum. arab. q. s. ft. emuls.	
Tr. opii,	gtts. v.
Syr. simp.,	10.0 (℥ijss).

M.
S.—A teaspoonful every two hours.

In the case of abdominal pains, a wet poultice on the abdomen; in frequent tenesmus—soothing enemas (not more than one or two tablespoonfuls) and always warmed (97 to 99° F.). These are given twice or three times a day in the form of a decoction of starch (a teaspoonful of starch to a glass of water) or linseed with opium.

(76)
℞
Decoct. sem. lini,
(or)
Decoct. amyl., 50.0 (℥i-℥ijss).
Tr. opii, m. vi.
M.
S.—One to two tablespoonfuls for an enema (to a child six to twelve months of age).

Some patients do not bear enemas, but are readily relieved with suppositories of opium and cocain.

(77)
℞
Ext. opii, aque, 0.06 (gr. i)—to 0.24 (gr. iv).
Butyr. cacao, 1.0 (gr. xvi).
M. ft. supposit. No. 8.
S.—Apply twice a day (per rectum) (to a child two to five years of age).

One grain of extract of opium is held equal to ten grains of Dover's powders, i. e., a pure powder of opium.

(78)
℞
Cocain mur., gr. i—gr. ij.
Butyr. cacao, ℥i.
M. ft. supposit. No. 6.
S.—Apply to the rectum twice or three times a day (for a child two to five years of age).

The maximum dose of cocain is equal to that of opium; thus as a moderate dose we may accept one-tenth of a grain a day for each year.

If the tenesmi are so severe, and the rectum is so irritated, that suppositories cannot be tolerated, then small pieces of ice should be tried, introduced in anum. Pieces of ice the size of a hazel-nut should be introduced every two or three minutes, about five pieces in succession; then an interval of one hour followed by a renewed application of ice, and so on during the twenty-four hours.

If the first dose of laxative fails to produce a modification or, if the alleviation after the laxative soon gives way to tenesmi and straining, then the laxative may be of use if repeated in about two days. In somewhat protracted cases, when tenesmi diminish, entero-clysmata consisting of large quantities (one to four glasses, according to the age) of warm, one per cent. solutions of tannin, sodium salicylate or sodium benzoate should be prescribed.

(79)
℞
Sol. acid tannici, 1 per cent.—720.0 (lb. ij).
S.—For enemata (apply warmed to a temperature of 97 to 99° F.).

Dyspepsia in nurslings requires, first of all, a regulation of the diet. If the child be breast-fed, then he should be nursed, for the first three months, every two hours during the day-time and twice during the night; later on, every three hours in the day-time and only once at night, the breasts being used alternately. If the mother's breast contains too much milk, then it should not be drawn before feeding (because the thin milk is then removed, and the thicker portion remains); but it is better to shorten the time of feeding. If, for instance, the child usually nurses about fifteen minutes, then he should remain at the breast only about eight minutes. The mother should not eat sour and sweet articles of food. Dyspepsia is sometimes persistent because the mother eats too much nutritive, meat-food; it is useful in such cases to prescribe more vegetable food (black gruel, macaroni, potatoes), meat, however, should be allowed once a day. If dyspepsia is very persistent, despite the nourishment and the diet of the mother are correct, then a wet-nurse should be employed. If the child be bottle-fed, then all rules of artificial feeding must be strictly carried out, as briefly here described.

Two foundation principles, without which *artificial feeding* cannot be successfully conducted, consist, first, in the absolute cleanliness of all the utensils employed for milk; second, until three or four months old the child should not be given either hard food or carbohydrates, and exclusively cow's milk should be used.

One should begin with diluted milk and gradually work up to

the standard strength. The degree of dilution depends upon the child's age, as well as on his digestive powers.

One must use fresh milk (milk just from the cow is the best), boil it, and preserve it in a good, covered vessel, always the same in which the milk was boiled, because together with the milk the vessel is also sterilized. In this regard Soxlet's apparatus is especially valuable, and may be therefore recommended for the summer-time. Before using the milk it is diluted with water and boiled again. For the new-born one part of milk is diluted with three parts of water, a teaspoonful of sugar being added to a glass of the mixture. As the per cent. of fat and sugar in the milk is too much reduced from the dilution with water, it is recommended, at the present time, to take, instead of plain water, a solution of lactic sugar (ten per cent.), and only one portion of the sugar-solution with two portions of water is taken for children of any age. This method is especially good for children who suffer from constipation.

For those from one to three months two parts of water are taken for one part of milk; for three to four months, one part of water to two parts of milk, and after six months the pure milk is used.

If the stool is normal, then one may proceed to pure milk earlier, and in the case of the first signs of digestive disorders (colics, green dejections) one should return to weaker dilutions, and, if then the milk is badly borne, then instead of plain water barley or oat-decoction are taken.

For preparing such a decoction a dessertspoonful of barley or oats is used and after boiling it is filtered through a cloth; then it is added to the milk in the same proportions as plain water. It is well also, especially in the summer time, to add to the milk a soda solution: to a glass of diluted milk a tablespoonful of a two per cent. solution of soda should be added.

(80)

℞

Sodii bicarb.,	2.0	(ʒss).
Aq. dest.,	100.0	(ʒiij-ʒijss).

M.

S.—A tablespoonful to a glass of water.

For rachitic patients a dilution of milk with veal broth is recommended. Sometimes the milk is not borne by the child because the cow is not properly fed, or because she is a new milker or generally in poor condition. In order to avoid individual influences of the cow it is better to take mixed milk from several cows, the best food for the cow being hay mixed with mash.

If the child does not tolerate cow's milk in any dilution, then *Biedert's cream-mixture* should be tried. To a newly-born the weakest mixture (No. 1, see below) is administered. Later on pure milk is added to this mixture in gradually increasing quantities. Biedert established six of the mixtures:—

No.	*Cream.*	*Water.*	*Sugar.*	*Milk.*
1	⅛ of a litre*	⅜ of a litre	℥ss.	
2	the same	the same	the same	1-16 of a litre
3	the same	the same	the same	⅛ of a litre
4	the same	the same	the same	¼ of a litre
5	the same	the same	the same	⅜ of a litre
6	without cream	¼ litre	the same	½ of a litre

The cream is prepared as follows:—a bottle of fresh milk is placed in a wide vessel for three or four hours in a cool place and then half a glass of thin cream is taken from the upper part of the same.

Of the substitutes for cow's milk one may mention *condensed Swiss-milk* and *Nestle's Food*. The former, because of large admixture of sugar is not good for a continuous feeding of children, and may perhaps be recommended only when traveling for one or two days. For small children sixteen teaspoonfuls of water are taken for one teaspoonful of a substitute; for older ones, ten. Nestle's food being rich with starch is good only for children older than four months. It is employed either in the form of gruel, or milk. In the former case one should take six tablespoonfuls of water to one tablespoonful of the food; in the latter ten spoons of water to one tablespoonful; one should *necessarily heat the mixture.*

[The opinion of American writers is decidedly in favor

*Half of a glass, or eight tablespoonfuls.

of some modification of uncooked cow's milk, to the exclusion of prepared foods, believing that by this method the occurrence of many of the diseases of malnutrition which have their origin in improper feeding is obviated. The plan as outlined by Holt in his *Diseases of Infancy and Childhood,* or some modification thereof, is certainly productive of the most gratifying results. Some of the points so essential in artificial feeding, namely, the production of a pure uncooked food identical in its constituents to mother's milk, can be almost definitely obtained by this plan. Briefly stated the proposition is as follows:—take pure cow's milk, dilute it with boiled water, toast water or gruel made from rice, barley, oatmeal, arrowroot, etc., add cream and milk sugar in sufficient quantity to make it, so far as the digestibility and nutritive properties are concerned, identical to mother's milk. It must be remembered, however, that conditions exist in the infant with which not even breast-milk will agree, and that more frequently these same morbid conditions exist in artificially-fed infants; hence it is obvious that the difficulties in the selection of a proper food will be numerous and that while a general plan may be followed it is imperative in each case to prepare a food which is suitable to the condition of the patient.

The following tables showing the amount of each constituent, together with the percentages obtained, may be of assistance in the preparation of food.

MODIFICATION OF COW'S MILK FOR INFANT FEEDING.

	Fat.	Sugar.	Proteids.	Salts.	Water.
Mother's milk	4 %	7 %	1.50%	.20%	87.30%
Cow's milk	3 to 4%	4.30%	4 %	.70%	87.80%
Cream	8 to 16%	4 %	3.60%	.60%	

Food for Infant to 2 months (2% fat).

No. 1.					
Milk 3% ℥viii	24 %	34.40%	32 %	5.6 %	
Cream 16% ℥iss	24 %	6 %	5.4 %	.9 %	
Sugar ℥i¼		125 %			
Water ℥xivss					
Total 24 oz	48 %	165.40%	37.4 %	6.5 %	
Result	2 %	6.9 %	1.5 %	.22%	

No. 2.

Milk 4% ℥viii	32	%	34.4	%	32	%	5.6	%	
Cream 16% ℥i	16	%	4	%	3.6	%	.6	%	
Sugar ℥i 1-3			133.3	%					
Water ℥xv									
Total 24 oz	48	%	171.7	%	35.6	%	6.2	%	
Result	2	%	7.+	%	1.5	%	.2+	%	

Food for Infant 2 to 5 months (3% fat).

No. 3.

Mi'k 3% ℥viii	24	%	34.4	%	32	%	5.6	%	
Cream 16% ℥iii	48	%	12	%	10.8	%	1.8	%	
Sugar ℥i¼			125	%					
Water ℥xiii									
Total 24 oz	72	%	171.4	%	42.8	%	7.4	%	
Result	3	%	7.1	%	1.75%		.33%		

No. 4.

Milk 4% ℥vi	24	%	25.8	%	24	%	4.2	%	
Cream 16% ℥iii	48	%	12	%	10.8	%	1.8	%	
Sugar ℥i 1-3			133.3	%					
Water ℥xv									
Total 24 oz	72	%	171.1	%	34.8	%	6	%	
Result	3	%	7.+	%	1.5	%	.25%		

Another Formula.

No. 5.

Milk 4% ℥x	40	%	43	%	40	%	7	%	
Cream 16% ℥ii	32	%	8	%	8	%	1.2	%	
Sugar ℥i 1-6			117	%					
Water ℥xii									
Total .24 oz	72	%	168	%	48	%	8.2	%	
Result	3	%	7	%	2	%	.3+	%	

No. 6.

Food for Infant 6 mos. to 1 year (4% fat).

Milk 3% ℥viii	24	%	34.4	%	32	%	5.6	%	
Cream 16% ivss	72	%	18	%	16.2	%	2.7	%	
Sugar ℥i 1-6			116	%					
Water ℥xiss									
Total 24 oz	96	%	168.4	%	48.2	%	8.3	%	
Result	4	%	7	%	2	%	.33%		

No. 7.

Milk 4% ℥viii	32	%	34.4	%	32	%	5.6	%	
Cream 16% ℥iv	64	%	16	%	14.4	%	2.4	%	
Sugar ℥i 1-6			117	%					
Water ℥xii									
Total 24 oz	96	%	168	%	46.4	%	8	%	
Result	4	%	7	%	1.5+%		.3+%		

—Earle.]

The average *amount of food* for healthy children may be approximately determined so that under four months the child may get at once as many ounces of liquid as he is months old, plus one ounce more; thus, for one month old—two ounces or four tablespoonfuls, for a three-months-old, four ounces or eight tablespoonfuls. After six months—six ounces.

Regarding the *time of feeding* one should remember that the younger the child, or the easier stomach disorders set in, the less must be the portion of food given at once, but the food may be taken oftener. Thus, under two months the child is fed every two hours in the day time and twice in the night (nine times during twenty-four hours); after two months, every three hours in the day time and once in the night (seven times during twenty-four hours).

Milk should always be given to a child warmed (97° F.).

The nursing-bottle should be of glass. If milk is well borne by the child, then he must be quiet, regularly gain in weight and move the bowels once or twice in twenty-four hours, the fæces being yellow and of jelly-like consistency.

The most dangerous period for bottle-fed children is the summer-time, because in the hot weather they often take sick

with vomiting and diarrhœa. Boiling of the milk, addition of soda and the examination of the reaction belong to prophylactic measures to avoid summer diarrhœa.

After eight months one may use additional feeding with meat-broths. For obese children, who are always pale and inclined to eczema, constipation and rachitis, it is useful to begin additional feeding with soup even earlier, for instance, from the fifth month. Cutlets may be given in the beginning of the second year, when the first molar teeth have been cut.

According to the symptoms of dyspepsia, these or other symptomatic remedies may be resorted to:—

(81)

℞

Acidi mur. dil.,	m. x.
Decoct. salep,	60.0 (℥ij).
Syr. simp.,	10.0 (ʒijss).

M.

S.—A teaspoonful every two hours (in the case of vomiting of undigested milk).

(82)

℞

Pepsin rossici,	0.6 (gr. x).
Acid. mur. dil.	gtts. x.
Aq. dest.,	60.0 (℥ij).
Syr. simp.,	10.0 (ʒijss).

M.

S.—Like the preceding, especially in dyspepsia of abortive children.

In the case of too acid reaction of vomited masses and acid dejections, irritating the skin, circa anum, alkalies are more suitable.

(83)

℞

Sodii bicarb.,	0.6 (gr. x).
Aq. dest.,	60.0 (℥ij).
Syr. simp.,	10.0 (ʒijss).

M.

S.—A teaspoonful every two hours.

(84)

℞

Aq. calcis.	
Aq. dest.,	āā 30.0 (℥i).
Syr. simp.,	10.0 (℥ijss).

M.

S.—Teaspoonful every two hours.

In chronic cases with the abundant formation of gases, bitter remedies are of value.

(85)

℞

Tr. cascarill.,	m. xx.
Aq. dest.,	60.0 (℥ij).
Syr. simp.,	10.0 (℥ijss).

M.

S.—A teaspoonful every two hours.

(86)

℞

Tr. nucis vom.,	m. ij-v.
Aq. dest.,	60.0 (℥ij).

M.

S.—Teaspoonful every two hours.

Tincture of nux vomica is a powerful remedy and is given to children in doses of not more than half a drop for each year, or two drops for the day per year of age, for instance, a two-year-old child is given about four drops a day, a six-year-old about twelve, etc.

In the treatment of attacks of dyspeptic colics:—(1) massage of the abdomen (rubbing with the ends of the fingers, covered with oil, in the direction of the colon); (2) introduction of a catheter in the rectum to the height of two inches; (3) enema of water; (4) a warm bath; (5) to prevent relapses—a wet poultice around the belly.

Of internal remedies tincture of opium is the best to alleviate pains, but it should be given only until the appearance of the first signs of somnolency. One may give during a day as an average quantity one drop for each year. Opium is usually given together

with other antidyspeptic remedies; for instance, in vomiting or diarrhœa, together with muriatic acid.

(87)

℞

Acid mur. dil.,	m. x.
Aq. dest.,	60.0 (℥ij).
(or decoct. salep, or decoct. rad. altheæ).	
Tr. opii,	m. j.
Syr. simp.	8.0 (℥ij).

M.

S.—A teaspoonful every two hours. (To a child three to six months of age).

One may also give chloral, and in much larger doses than opium, but also only until sleep; to a child one year of age 0.1 to 0.2 (gr. iss-gr. iijss) per dose four to six times a day; two to three months of age 0.03 to 0.12 (gr. ss—gr. ij) or up to 0.25 to 0.4 (gr. iv to gr. vij) per day.

(88)

℞

Chloral hydrat. cryst.,	0.5 (gr. viij).
Decoct. rad. alth.,	60.0 (℥ij).
Syr. simp.,	8.0 (℥ij).

M.

S.—A teaspoonful every two hours until sleep sets in. (To a child aged three or six months).

To newly-born or children several weeks of age it is better not to give narcotics but to resort to the so-called carminatives:

(89)

℞

Aq. fœniculi.	
Aq. dest.,	āā 30.0 (℥i).
Aq. lauroceras,	m. ij—xij.
Syr. simp.,	10.0 (℥ijss).

M.

S.—A teaspoonful or half a teaspoonful every hour.

(Aqua laurocerasi may be given to a newly-born, half a drop pro dosi; a one-year-old, two to three drops, and to older ones

as many drops as the patient is years old, every hour or two hours).

(90)
℞

Pulv. cort. cinamoni,	0.6 (gr. x).
Magnes. carbon.,	1.0 (gr. xvi).
Sacch.,	3.0 (gr. xlviij).

M.

S.—To give on the tip of a knife several times a day.

Dysuria. See Painful micturition.

Eclampsia infantum, (infantile eclampsia), general convulsions. One must treat the fit itself and then remove the cause to prevent relapses.

A symptomatic treatment of the paroxysm of convulsions with internal medicines is impossible, because the patient at that time cannot swallow. The best symptomatic remedy is inhalation of chloroform (a teaspoonful of chloroform is poured over a folded handkerchief which is held at a distance of two inches from the face until the fit ceases). Besides this, cold to the head and mustard to the legs and neck. When the child can swallow, and diarrhœa is absent, then a laxative (calomel) should be given, and after that, either chloral, or potassium bromide.

(91)
℞

Chloral hydrat.,	2.0 (ʒss).
Decoct. altheæ,	90.0 (ʒiij).
Syr. simp.,	10.0 (ʒijss).

M.

S.—A teaspoonful every hour until sleep (to a child one year old).

(92)
℞

Potass. brom.,	2.0 (ʒss).
Aq. dest.,	90.0 (ʒiij).
Syr. simp.,	10.0 (ʒijss).

M.

S.—A teaspoonful every two hours (to a child one year of age).

The preventive treatment cannot always be applied, as in many cases the causes are not removable (acute and chronic cerebral diseases, epilepsy, convulsions in the beginning of acute febrile diseases), in other cases we should treat the constipation, dyspepsia, intestinal worms, dentition, and, especially, rachitis. The general irritability of the child, sleeplessness, and convulsions depending upon dentition, readily yield to bromide treatment.

Ecthyma. There should be instituted the general treatment for scrofula, rachitis or exhaustion, according to the case; scabies should be borne in mind.

Bathe with soda (a tablespoonful of soda to a pail of water 97 to 99° F. remaining therein ten minutes) use every day.

(93)
℞
Hydrarg. albi præcip., 2.0 (ʒss).
Adeps, 30.0 (℥i).
M.
S.—Apply to the rash four times a day.

Eczema. The treatment of eczema must correspond to its period. In the acute stage when the skin is denuded of the epidermis, being red and wet, then there are indicated powdering, unguentum diachylon, hydrarg, præcipitatum album, etc., but by no means tar and its preparations, which are solely applicable to cases of dry, desquamative eczema.

(94)
℞
Ung. diachyl. simp., 30.0 (℥i).
S.—Apply to the rash on a cloth; to be changed twice a day.

(95)
℞
Acid. salicyl., 1.0 (gr. xvi).
Spts. vini.
Glycerini, q. s. ad. solut.
Adeps, 30.0 (℥i).
M. ft, ung.
S.—Apply to the rash four times a day.

(96)

℞

Zinci benzoici,	4.0 (℥i).
Ol. fagi,	1.0 (gr. xvi).
Ung. cetacei,	30.0 (℥i).

M.

S.—Apply four times a day.

(97)

℞

Hydrarg. præcip. albi,	1.25-2.0 (℈i-℥ss).
Adeps,	30.0 (℥i).

S.—Apply to the rash four times a day.

(98)

℞

Bismuthi subnit.	
Flores zinci,	āā 8.0 (℥ij).
Amyl. tritici,	30.0 (℥i).

M.

S.—Powder.

When the wet eczema is transformed into a dry one then:

(99)

℞

Ung. diachyl. simp.,	30.0 (℥i).
Ol. rusci,	8.0-15.0 (℥ij-℥ss)

M.

S.—Apply to the rash four times a day (the amount of the tar should be gradually increased.

In the dry eczema (eczema chronicum).

(100)

℞

Ol. rusci (or ol. cadini),	30.0 (℥i).

S.—Pencil the affected place once a day and then apply a powder.

If the wet places are covered with crusts, then they must be removed. For this purpose they are covered for a few hours with a cloth spread with lard, and then the crusts are removed by

washing with warm water. [Raw (scraped) potato poultice is preferred by many.—EARLE]

One should avoid frequent lotions to the parts of the skin affected with eczema.

It is very important for the successful treatment to remove the associated cause; scrofula, rachitis, obesity, scabies and other local irritations.

ENTERALGIA. See Dyspepsia. In older children the cause of colics may be constipation, cold, some local irritation, worms, diseases of the vertebræ. Warm baths, an anthelminthic or a jacket are accordingly indicated.

ENTERITIS FOLLICULARIS. See Dysentery.

ENTERO-CATARRHUS (acute intestinal catarrh). Diet:—a wet-nurse, for bottle-fed children, and if this be impossible, then a milder food should be prescribed than that in use when the diarrhœa started. Children one or two years of age should be given rice-soup and Nestle's food, breast-fed ones, cow's milk or Biedert's cream-mixture in the strongest dilutions, for instance, milk with three portions of decoction or the cream mixture No. 1.

Of medicines opium is the best given alone, or together with muriatic acid (see Dyspepsia), or bismuth, one or two grains at a dose.

(101)

℞

Bismuthi subnit.,	1.25-2.5 (℈i-℈ij).
Sacchar.,	2.5 (℈ij).
Pulv. Doveri,	0.18 (gr. iij).

M. ft. in chart No. 12.

S.—A powder three times a day (to a child six or eight months old):

(102)

℞

Bismuthi salicyl.,	2.4 (℈ij).
Sacchar,	2.5 (℈ij).
Pulv. Doveri,	0.24 (gr. iv).

M. ft. chart No. 12.

S.—Three powders a day (to a child one year of age).

Bismuth (subnitricum or salicylium) does not belong to the class of strong remedies, so that it may be prescribed in still larger doses; but one must be careful with Dover's powder, of which ten parts contain one grain of opium and, if the physician does not know how the child bears opium, not to use the maximum doses. We advise to give during twenty-four hours only half-a-grain, and at a dose one-fourth or one-eighth of a grain. If it be found that the doses are well borne by the child, then they may be increased.

Entero-catarrhus Chronicus. (Chronic intestinal catarrh). For children under two years the diet should have prompt attention. Change the child's food and give him such as he is less accustomed to; while the rules for artificial feeding should be borne in mind. If the child suffering with chronic diarrhœa has been fed only with soup and tea, then it is better to administer milk; and if he was fed with milk, then change the latter for carbohydrates, for instance, Nestle's food, oat-meal gruel. In chronic diarrhœa of older children the most suitable diet is milk and carbohydrate substances; meat, however, should be altogether forbidden for two weeks. In the case of offensive stools the treatment begins with a laxative (castor-oil) and then, according to circumstances, there is prescribed either opium (frequent dejections and pain), or astringents or anti-fermentative remedies (in very fœtid dejections). It is usually necessary to resort to different remedies.

(103)

℞

Tannini, 0.18-0.72 (gr. iij-gr. xij).
Magister bismuthi, 0.72-1.5 (gr. xij-gr. xxiv).
Sacchar., 2.5 (℈ij).

M. ft. chart No. 12.

S.—One powder twice a day (to children one to four years of age).

After powders containing bismuth the stools may assume a dark-brown or black color.

Soltman is especially satisfied with purified argil (clay):

(104)

℞

Argillæ depurati,	1.0 (gr. xvi).
Aq. dest.,	50.0 (℥iss).
Tr. opii,	m. ij-v.
Syr. simp.,	20.0 (℥iv).

M.

S.—Shake and give a teaspoonful every two to three hours.

(105)

℞

Tannini,	0.12-0.5 (gr. ij-gr. viij).
Bismuthi salicyl.,	0.5-1.0 (gr. viij-gr. xvi).
Pulv. Doveri,	0.12-0.5 (gr. ij-gr. viij).
Sacchar.,	2.5 (℈ij).

M. ft. chart No. 8.

S.—One powder four times a day (to children one to five years of age).

(106)

℞

Decoct. rad. colombo ex.,	4.0-12.0 (℥i-℥iij).
Ad. colaturam,	90.0 (℥iij).
Syr. simp.,	10.0 (℥ijss).

M.

S.—A tea or dessertspoonful every two hours (to children one to five years of age).

This mixture does not taste well, and is weaker in its therapeutic effects than silver nitrate.

(107)

℞

Argent. nit.,	0.06 (gr. i).
Aq. dest.,	90.0 (℥iij).
Syr. simp.,	10.0 (℥ijss).

M.

S.—Half a teaspoonful every two hours (to a child one to four years of age).

Lately tannalbin has been recommended (albuminate of tannin) which is tolerated in large doses and undoubtedly is better

than tannin and many other astringents. Children under three years of age are given 0.3 (gr. v), older ones 0.5 (gr. viij) pro dosi, twice or three times a day.

Of anti-fermentative remedies the following are recommended:—sodium benzoicum (up to 0.5 (gr. viij) pro die in solution), naphthalinum purissimum one grain to a year, pro dosi, about four times a day (older children are given four to six grains pro dosi), but as the naphthalin preparation is sometimes not pure, then it is better to start with one-half or one-third the quantity. A very repugnant, but a positive remedy is:—

(108)
℞
Sodii benzoici, 4.0 (ʒi).
Aq. dest., 90.0 (ʒiij).
Tr. opii, gtts. vi.
Syr. simp., 10.0 (ʒijss).
M.
S.—A tea or dessertspoonful every two hours (to a child three or five years old).

Naphthalin is not soluble in water, being therefore always prescribed as a powder alone (*per se*) or together with other remedies, for instance, with Dover's powder or bismuth:

(109)
℞
Naphthalini puriss.,
Magist. bismuthi, āā 0.5 (gr. viij).
Pulv. Doveri, 0.12-0.16 (gr. ij-gr. ijss).
M. ft. chart No. 4.
S.—One powder four times a day (to a child aged two or five years).

In chronic diarrhœa of small rachitic children, or in older and anæmic ones, when the bowels are not moved often, for instance, about twice a day, iron in small doses is indicated; to children one or two years of age a grain a day, for those older not more than a grain-and-a-half or two grains of some astringent remedy:

(110)

℞

Ferri lactici,	0.24-0.36 (gr. iv-gr. vi).
Magist. bismuthi,	0.72-1.5 (gr. xij-gr. xxiv).
Sacchar,	2.5 (℈ij).

M. ft. chart No. 12.

S.—One powder three times a day (to children one to five years of age).

If chronic diarrhœa occurs with symptoms of gastric catarrh (distension and painfulness of the epigastrium, coated tongue, loss of appetite, eructation, nausea), then it is best to treat with alkaline mineral waters, as Ems (Krenchen) or Vichy (Célestins), Essentucki (No. 17). Children one to two years of age may take a teaspoonful every two hours, those older a dessert or tablespoonful.

If there are signs of the large bowels being especially affected, then injections should be made of large quantities of water or solutions of antiseptic substances (harmless) by means of rectal tube. To a child one year old one ordinary glass is injected; two years old, two glasses; three years, three; to each glass of tepid water a teaspoonful of sodii benzoici or tannin is added.

Of external means of value in chronic intestinal catarrh abdominal flannel supporters may be mentioned, and in the case of abdominal pain, wet poultices. In periodic diarrhœa quinine should be remembered.

[Enteritis Muco-membranous. The diet should be a light one, the patient may be given milk, arrow-root, eggs, meat, meat-juice, beef-tea, fruits in small quantities and always cooked; wine should be forbidden. Then one should watch the normal activity of the bowels; they should be moved every day, by means of a laxative if necessary (castor-oil, sodium sulphate or magnesium sulphate one to two drams every morning) as well as different mineral waters; enemata are also of use when introduced deeply and containing oil.

The third indication is to calm the pains. The best means is by compresses, i. e., cold wet linen (squeezed out well), covered with oil silk and flannel, and left for a few hours or for the

whole night. This may be associated with belladonna preparations internally or belladonna and opium suppositories.

Try to soothe the injured mucous membrane of the intestines. For this purpose large enemata are proposed containing silver nitrate, ichthyol, bismuth salicylate. The water should be warm, about 104° F., such water calming the pain, while the temperature may be increased up to 110-115° F. It is useful to give an evacuant enema, and after that to introduce by means of a common tube one or two glasses of the above named solutions in corresponding doses*; the patient is to hold the second enema as long as he can.

Massage, hydrotherapy, mineral waters (Carlsbad, Vichy), in connection with a tonic treatment, should not be neglected (of tonics alcoholic preparations as well as those containing iron should be forbidden).—Earle.]

Enuresis nocturna, or nocturnal incontinence of the urine. Incontinence of the urine in the night-time is observed in older children suffering with nervousness, or malnutrition; therefore, a general tonic treatment is indicated. The child should not be allowed to eat or drink at bed-time (the last meal should be two hours before sleep), as well as not study hard. It is advisable to cause the child to retain the water as long as possible during the day time. Of medicines, nux vomica and rhus aromatica:

(111)

℞

Tr. nucis vomicæ, 4.0 (℥i).

S.—Three to five drops four times a day (to children six to ten years of age).

(112)

℞

Ext. rhus aromat. fl., 10.0 (℥ijss).

S.—Five or fifteen drops twice a day according to age.

Rhus aromatica is employed only in the form of a fluid extract, which is prescribed in drops as many as the child is years

*One may use silver nitrate (1:500), ichthyol (4:500), bismuth (8:500). (8:500).

old. The action must set in rapidly; therefore, if no improvement is noticed after the lapse of seven or ten days, then the further giving of medicine is useless.

[As enuresis nocturna is often produced by adenoid vegetations of the nose, the rational treatment of such cases must be the removal of the vegetations by means of an operation (see text p. 256).—Earle.]

Epilepsy, "falling disease." Of symptomatic remedies which are recommended for epilepsy, bromides are the most certain in action; the doses should be gradually increased from four up to ten grains to each year. If the intervals between the fits considerably increase, then the dose should be gradually decreased. The treatment should last uninterruptedly for months. In epilepsy of anæmic children (see Anæmia) arsenic and iron are indicated; if late hereditary syphilis is suspected, potassium iodide is indicated (see Syphilis).

In the case of very frequent and violent fits, chloral should be given, together with bromides.

(113)

℞

Chlorali hydrati.,	
Potassi brom.,	
Sodii brom.,	āā 4.0 (℥i).
Aq. dest.,	180.0 (℥vi).

M.

S.—A dessert- or tablespoonful four times a day (to children five to ten years of age).

[Bechterew recommends in the treatment of epilepsy a combination of bromides with codein and some heart-tonic, as, for instance, adonis vernalis:

(114)

℞

Infus. adonis vernalis, ēx. 4.0-180.0	(℥i-℥vi).
Potassii brom.,	12.0 (℥iii).
Codeini,	0.12 (gr. ii).

M.

S.—A teaspoonful every two hours.

Epistaxis. See Nose Bleed.

Erysipelas. In a local, circumscribed erysipelas—cold compresses. In migrans erysipelas occurring with constipation, one should begin the treatment with laxatives, especially with calomel 0.03 to 0.06 (gr. ss. to gr. i), pro dosi, every hour if needed; if the fourth or the sixth powder does not act, then castor-oil. Of local remedies painting of the skin (the places affected with erysipelas), especially the margins of the redness, with pure iodine tincture once or twice a day, or with iodoform salve.

(115)
℞
Iodoformi, 1.0 (gr. xvi).
Vaselini, 10.0 (℥ijss).
M.
S.—Ointment.

Or

(116)
℞
Iodoformi, 1.0 (gr. xvi).
Collod., 20.0 (℥v).
M.
S.—Pencil twice a day, including the space of about three fingers of the healthy skin in the area of the redness.

[In 1895 Marmorek very successfully applied his method of treatment of erysipelas—with antistreptococcic serum. Out of forty-six cases in forty-five recovery was obtained. The amount of injected serum (to adults) varied between 5 and 20 c. cm. The temperature would fall to the normal standard, the general condition improved; albumen, if it was present in the urine, would disappear. This method is not yet commonly used, but in severe cases, helpless ones, it should be given a trial (*A. Robin*).

Very good results in the treatment of erysipelas are obtained from A. Robin's method—spraying with tepid solutions of Van Swieten's fluid. By this method Robin had the best results even in the most severe cases of erysipelas. The technique is as follows: A solution of corrosive sublimate is taken (1:1000), to which acid tartaric is added (sixteen grains to three pounds).

The atomization is accomplished by means of a steam atomizer, which is placed at a distaance of six inches from the diseased part. The spray is directed to the inflamed place as well as to the surrounding parts. The eyes should be closed and protected with absorbent cotton; the mouth should be equally protected. The hair, if the head is involved, should be cut. The spraying lasts half an hour, and during the first two days it is used eight times. On the third day there is usually a marked improvement, so that one need only use six or seven sprayings. Recovery sets in usually on the third to sixth day. The diet should consist of milk; the urine should be examined every day.

The warm atomizations quickly produce abatement of the pains, are easily applied, being harmless and "of remarkable benefit" (*Robin*). If a steam atomizer is not at hand, one may use an ordinary hand bulb atomizer; only a tepid solution of corrosive sublimate should be taken. Simultaneously a tonic treatment is indicated, for which purpose quinine, alcohol, and *cold baths;* the latter are especially serviceable in adynamic forms of erysipelas, or when nervous disorders are especially developed.

Attention always should be paid to the heart and the following mixture is to be recommended in cases of heart-failure:

(117)

℞

Pulv. digitalis,	0.3 (gr. v).
Aq. bul.,	75.0 (℥iiss).

To this add:

Potassii acetici,	1.0 (gr. xvi).
Ergotini (Bonjean)	1.5 (℈i).
Oxymel scillæ,	15.0 (℥ss).

M.

S.—A teaspoonful every three hours, until the pulse and the increased amount of urine show the better condition of the heart activity.

As a preventive measure one may advise an antiseptic condition of the mouth, throat, nose, etc.—Earle.]

Erythema Simplex and Erythema Nodosum do not require any special treatment. In the case of large nodes on the legs, causing pain—compresses of lead water.

FALLING DISEASE. See Epilepsy.

FALSE CROUP. See Catarrh of the Larynx or Laryngitis.

FAVUS. See Herpes Tonsurans.

FÆCAL VOMITING. See Intussusception.

FEVER, ABDOMINAL. See Typhoid Fever.

FEVER, TYPHUS. See Typhus Fever.

FOLLICULAR ENTERITIS. See Dysentery.

GANGRENE OF THE LUNGS. A nutritive diet, wine, inhalation of turpentine vapor (ten drops to a bottle of hot water), or internally, for instance.

(118)
℞

Ol. terebinth.,	m. x.
Mist. gummos.,	60.0 (℥ij).

M.
S.—A tea or dessertspoonful every two hours.

(119)
℞

Ext. cort. chinæ regiæ,	2.0 (℥ss).
Potass. chlor.,	0.6 (gr. x).
Aq. dest.,	90.0 (℥iij).
Syr.,	10.0 (℥ijss).

M.
S.—Like the preceding.

(120)
℞

Creosoti,	m. x.
Spts. æth.,	gtts. vij.
Aq. dest.,	60.0 (℥ij).
Sacch.,	10.0 (℥ijss).

M.
S.—A teaspoonful every two hours.

(121)

℞

Terpini hydrat.,	2.0 (ʒss).
Spiriti,	
Aq. dest.,	
Syr. menthæ,	āā 60.0 (ʒij).

M.

S.—A tea or dessertspoonful four times a day.

[Besides inhalations of turpentine oil there also are to be recommended: *eucalyptus, thymol* and *creosote*. The following prescriptions of these remedies are given by Lancereaux:

(122)

℞

Ol. eucalypti glob.,	15.0 (ʒss).
Ol. lavandulæ,	gtt. v.

M.

S.—Twelve drops to be mixed with a small quantity of hot water. For inhalation.

(123)

℞

Creosoti,	4.0 (ʒi).
Alcoholi,	(90°) 100.0 (ʒiii-ʒiiss).
Aq. dest.,	200.0 (ʒvii).

M.

S.—Externally. (Inhalation).

Thymol may be combined with carbolic acid:

(124)

℞

Acidi carbolici,	5.0 (ʒiv).
Thymol,	1.0 (gr. xvi).
Alocoholi,	(90°) 90.0 (ʒiii).
Aq. dest.,	1000 (lbiii).

M.

S.—Apply externally.

(*Traité de Therap. appliquée* by Robin, Vol. vi.).—Earle.]

Gangrene of the Navel. Antiseptic powders, for instance:

(125)
℞
Iodoli, 10.0 (℥ijss).
S.—Powder.
Or

(126)
℞
Acid salicyl., 1.0 (gr. xvi).
Adeps, 15.0 (℥ss).
M.
S.—Ointment.

Gastritis, Acute. In acute gastritis of older children there should be an absolute abstinence from any food during twenty-four hours. For the thirst ice-water may be allowed in small portions. In case of constipation calomel, as a laxative 0.03 (gr. ss), pro dosi, every hour or two hours, as needed. Later on alkaline mineral waters.

Gastritis, Toxic. In case of poisoning with alkalies (ammonia, lye) vegetable acids are indicated in the form of lemonade or vinegar diluted with water. In the case of acid-poisoning soda, magnesia or chalk are given. Cold drinks and cold compresses to the epigastrium.

German Measles, or Rubella, requires no treatment.

Grippe. See Bronchial Catarrh.

Habitual Constipation. The causative treatment in nurslings is not very applicable, as we cannot essentially change the properties of the woman's milk, unless we resort to a radical method, i. e., change the wet-nurse. Constipation sometimes disappears rapidly in the nursling, if the nursing woman eats daily, after breakfast and dinner, a sour apple; in other cases to get at the cause requires a methodical treatment of the constipation of the mother (exercise, diet).

If the cause of constipation be suspected in the thorough and complete assimilation of the breast-milk, then additional food is prescribed, as cow's milk or cream-mixture, as well as broth or plain water (a tablespoonful) when the stomach is empty.

In the event of loss of tone of the intestinal musculature

we must treat the rachitis or anæmia, which diseases are the causes of the laxity, and, therefore, in such cases we give internally either bitter drops (elixir roborans of Wytt, as many drops as the child is months old, three times a day) or cod-liver oil (see Rachitis).

Strictures of the anus require an operation (a bloody or bloodless methodical dilation of the anus).

In the case of lack of breast milk, additional feeding or a change of the wet-nurse are indicated.

If constipation be caused by an early or too abundant use of carbohydrates, then the diet must be changed.

Constipation in bottle-fed and recently-weaned children, depending upon the extensive use of milk, best yields to a varied diet, and if the child persistently refuses any food but milk, then one must dilute the milk one-half with water, and at night milk should not be given at all.

The casual treatment of habitual constipation in older children requires, according to the circumstances, the treatment of anæmia, scrofulosis, or the omitting of such food as leaves an abundant residue (bread, potatoes).

In constipation accompanying an anal fissure, for removing the pain one should cover the fissure with a salve of cocain.

(127)

℞

Cocain hydrochlor.,	0.5 (gr. viij).
Vasalini,	5.0 (℥i gr. xvi).

M.

S.—Externally.

Besides this we should encourage the soft consistency of the fæces by means of mild cathartics, for instance, podophyllin or cascara. Both these remedies are most suitable in chronic constipation in general, because their dosage is convenient, and the organism not only does not become accustomed to these medicines, but their effect seems to increase upon prolonged using.

Podophyllinum is prescribed in an alcoholic solution or in powders in such manner that no more than 0.005 (gr. 1-12) pro dosi be given for each year, for instance:

(128)

℞

Podophyllini,	0.10 (gr. iss).
Sacchar.,	2.0 (ʒss).

M. ft. pulv. No. 10.

S.—One powder at night time (to a child two years old).

The powder is given at night, and the action should be in the morning; no stool occurring either another powder should be given or an enema administered, and in the evening a powder and a-half should be given at once; the dose is thus gradually increased, until jelly-like stools appear. Then the powder is stopped until twenty-four hours again pass without a movement of the bowels, when there should be given the same dose of podophyllin which was previously effective.

Cascara sagrada is employed almost exclusively in the form of a fluid extract, i. e., in drops.

(129)

℞

Ext. cascaræ sagradæ fl., 10.0 (ʒijss).

S.—Twenty drops pro dosi (to a five-year-old child).

The dose is at the beginning four drops for each year. Like podophyllin this remedy also acts slowly; therefore, it is always useful to give it at night and if it proves negative then an enema is employed and the next evening the dose is half more.

In constipations of nurslings it is best to resort to methodical enemata according to the following rules:—

(1) The enema should be given daily and at the same time each day.

(2) The enema should not be less than six tablespoonfuls (so that it will not be absorbed when there is a lowered sensitiveness of the intestines).

(3) Its temperature should be from 72.5 to 82° F.

(4) The enema should consist of plain water.

Usually after a few days of such treatment the child begins somewhat to move the bowels without an injection; upon such days no enema is used.

Massage of the abdomen is also of value.

Of internal remedies cod liver oil is recommended (half a teaspoonful twice a day), in emaciated rachitics, or:

(130)
℞
Tr. quin. comp.,
Tr. rhei vinosi., āā 4.0 (℥i).
M.
S.—As many drops as the child is months old (for obese children).

In cases of acute constipation in older children we most often use castor oil (children under one year of age, half a teaspoonful; two to three years—a teaspoonful, then a dessertspoonful, and to ten-year-old children—a tablespoonful), Vienna water, rhubarb.

(131)
℞
Inf. foliæ sennæ compos., 60.0 (℥ij).
Syr. mannæ (or simplex), 8.0 (℥ii).
M.
S.—A tea or dessertspoonful every two hours if needed (to children two to six years old).

(132)
℞
Tr. rhei. aq., 15.0 (℥ss).
Aq. dest., 45.0 (℥iss).
Syr. simp., 8.0 (℥ij).
M.
S.—A teaspoonful every two hours (to a child one or two years of age).

Especially in constipations appearing in the beginning of acute febrile diseases, as well as in acute nephritis and convulsions (eclampsia) calomel is recommended in comparatively large doses (see Dysentery).

Hæmatemesis. Cold compresses on the abdomen, cold drinks, and internally the following mixture:—

(133)

℞

Liq. ferri sesquichlor.,
Glycerini, āā 8.0 (℥ij).

M.

S.—One drop in a teaspoonful of cold water every two hours (to a new-born).

Hæmaturia. See Nephritis.

Headache. In acute cases (during fever) ice to the head and mustard between the scapulæ. In chronic headache, for the sake of carrying out the casual indication, it will sometimes be necessary to stop school. Remove the errors of refraction by means of spectacles, treat the anæmia and nervousness, the chronic diarrhœa or diseases of the brain. In frequent migrain (hereditary) the best remedies are antifebrin (one-fourth as much, in grains, as the patient is years of age, one dose every fifteen to thirty minutes, for two or four doses), phenacetin and antipyrin (both in as many grains as the patient is years old, also in two doses). In intermittent headache—quinine.

Helminthiasis. See Worms of the Intestinal Tract.

Hemicrania. See Headache.

Hereditary Syphilis. The treatment consists in administering internally mercurial preparations (calomel is the best, in older children the sublimate), or baths with sublimate (if a constant dyspepsia and intestinal catarrh are a contraindication to calomel, and erosions of the skin interfere with the mercurial inunctions) or mercurial ointment.

Calomel is administered by some in large doses, for instance, 0.015-0.02 (gr. ¼-gr. 1-3) twice a day, but it is unnecessary at all to use such large doses, which may harm the bowels, because the same effect can be produced by smaller quantities, for instance, 0.008 (gr. ⅛) pro die.

(134)

℞

Calomel, 0.008 (gr. ⅛).
Sacchari, 0.2 (gr. iiiss).

M

S.—One such powder a day.

As syphilitic patients are usually anæmic, it is useful to combine calomel with small doses of iron, for instance, 0.05 (gr. i), pro die, ferri carbon. saccharati, or (gr. ½) ferri lactici.

(135)
℞

Calomel,	0.06 (gr. i).
Ferri carbon. sacch.,	0.4 (gr. vii).
Sacchari,	4.0 (℥i).

M.

Divide in partes æquales No. 12.

S.—One powder to be taken twice a day.

In cases of a relapse of syphilis in children of several years of age corrosive sublimate is very well borne in small doses, for instance:

(136)
℞

Hydrargyrii muriatici corrosivi,	0.06 (gr. i).
Aq. destill.,	90.0 (℥iij).
Syr. simpl.,	10.0 (℥ijss).

M.

S.—A teaspoonful once a day after meals.

For baths, corrosive sublimate is usually prescribed with ammonium muriaticum, which makes it easier to be dissolved; for each bath 15 to 30 grains of corrosive sublimate are taken in accordance with the size of the bath (nearly 5 grains for a pail of water).

(137)
℞

Hydrargyrii muriatici corrosivi,	2.0-4.0 (℥ss-℥i).
Ammonii muriatici,	8.0 (℥ij).
Aq. destill.,	100.0 (℥iij-℥ijss).

M.

S.—For two baths (in cases of numerous exudative spots on the skin). One bath daily (95 to 97° F.).

In cases of feeble digestion, also in cases when more energetic treatment is necessary, mercurial treatment is to be employed.

(138)

℞

Ung. hydrarg. cinere., 0.3 (gr. v).

(In charta cerata)

S.—One portion to be rubbed into different parts of the body.

(Energetic treatment by friction produces in small children acute anæmia, sometimes even hæmorrhagic diathesis; older children stand friction better. Frictions should be resorted to in all cases where it is desirable to remove as soon as possible some dangerous symptoms, as iritis, stenosis laryngis and cerebral attacks).

In case of syphilitic snuffles and syphilitic affections of the mouth and throat the mucous membranes of these parts are penciled once or twice a day with a sublimate solution:

(139)

℞

Hydrargyrii muriatici corros., 0.06 (gr. i).

Aq. dest., 30.0-60.0 (℥i-℥ij).

M.

S.—Externally.

Condylomata and ulcers circa anum are powdered with calomel:

(140)

℞

Calomel, 4.0 (℥i).

S.—Powder twice a day with a brush.

In cases of large condylomata these are washed with *aqua chlori* immediately before applying calomel. In such a case calomel soon becomes converted into the sublimate, which acts *in statu nascendi.*

The mercurial treatment is applied until the complete disappearance of the syphilitic signs (two or three weeks), after that iron is administered on account of the following anæmia. In cases of relapse calomel is again to be resorted to, but if the child is in the second, or the third, year of age it is better to employ iodine.

(141)

℞

Kalii iod., 1.0-2.0 (gr. xvi-ʒss).
Aq. dest., 90.0 (ʒiij).
Syr. simpl., 10.0 (ʒijss).

M.

S.—One teaspoonful three times a day (for a child one-half to one year old).

Or

(142)

℞

Ferri iodati sacch., 0.03-0.06 (gr. ½-gr. i).
Sacch., 0.2 (gr. iiiss).

M.

S.—One such powder three times a day (for a child one-half to two years old).

In cases of an old syphilis (periostitis, caries, gummata, ulcera cutanea) iodine again, or Zittmann's decoction, or a sarsaparilla decoction, which is the chief constituent of Zittmann's decoction, are used:

(143)

℞

Dec'ti. Zittmanni mitis, 90.0 (ʒiij).

S.—To drink cold at bedtime.

A weak Zittmann's decoction does not contain folia sennæ and therefore the bowels do not become loose. If it is desirable to have this decoction without mercury, then it is prescribed as follows:

(144)

℞

Dec'ti. sarsaparillæ compositi mitis, 90.0 (ʒiij).

S.—Use like the preceding.

For a domestic decoction of sarsaparilla a dessertspoonful of radicis sarsaparillæ is to be taken for a cup of hot water, kept for a while on a water-bath and then drunk warm. It is necessary afterwards to avoid any exposure to cold.

Hernia umbilicalis. A small pad is applied to the navel, held by means of a broad flannel bandage or strips of adhesive plaster.

Herpes tonsurans. All hair should be cut short, and those of the affected places pulled out. The crusts and scales should be removed after being first covered with oil; after that they should be washed free with tepid water and soap, or soap-alcohol, and then the affected parts should be rubbed twice a day with

(145)
℞
Hydrarg. chlor. corrosiv., 0.06-0.12 (gr. i-ij).
Adeps, 30.0 (℥i).
M.
S.—Salve.

If after a few days the skin becomes red or inflamed, then the salve should be stopped until the inflammatory reaction subsides.

Herpes Zoster. Powder with starch the places covered by blisters.

Hydrocele. This disease disappears of itself in the newly-born or during the first months of life, so that no treatment need be instituted. If, however, it increases, then the treatment should be a surgical one, as in adults.

Hydrocephaloid. One should treat the diarrhœa, as the cause of the cerebral anæmia, and stimulants should be given (see Summer Diarrhœa).

Hydrocephalus acutus. See Meningitis.

Hypertrophy of the Tonsils. If it is not recent, being, for instance, one or two months old, then local treatment should be applied by using astringent remedies to the tonsils.

(146)
℞
Aluminis crudi,
Gum. arabici, āā 8.0.
M.
S.—Apply to the tonsils.

If this does not help then the tonsils should be removed by means of a tonsilotome or knife.

Icterus of the new-born. See Jaundice.

Imaginary Death of the New-born. See Death of New-born.

Incontinence of the Urine. See Enuresis Nocturna.

Infantile Atrophy. See Atrophy of Children.

Infantile Cholera. See Summer Diarrhœa.

Infantile Paralysis, or poliomyelitis anterior acuta. The therapy is quite helpless; the paralysis quite often soon disappears of itself, and those cases which prove permanent require a long-continued (many months) treatment with the galvanic current and massage.

Influenza. See Bronchial Catarrh.

Intermittent Fever. See Malaria.

Intertrigo.

(147)

℞

Amyli trit.,	30.0 (℥i).
Zinci flores,	
Magist. bismuthi,	āā 4.0-8.0 (℥i-ij).

M.

S.—Powder.

The sweating places (i. e. the folds) should be covered with pieces of dry gauze or absorbent cotton.

(148)

℞

Hydrarg. chlor. corrosiv.,	0.05 (gr. i).
Aq. dest.,	150.0 (℥v).

M.

S.—Lotion. (A piece of cotton soaked in this solution is applied to the affected fold of the skin).

This method acts quickly and with good effect.

Intestinal Catarrh. See Entero-catarrhus acute or chronic.

Intestinal Obstruction. See Intussusception.

Intestinal Worms. See Worms of the Intestinal Tract.

Intussusception. The most concentrated diet and rest.

Lavage of the stomach; opium until narcosis sets in. In the case of invagination of the large gut into the rectum, reduction of the invaginated portion may be effected by means of a stomach tube provided with a sponge on the end. In the case of invagination of the small bowels into the large ones abundant enemata of tepid water (according to some authors cold enemata are better). For the vomiting—pieces of ice. If all such means are of no use, then laparotomy should be performed.

Itching of the Skin. If itching of the skin be not accompanied by any eruption, being a manifestation of some neurosis, then besides the general treatment, depending on the patient's condition (rachitis, scrofula, anæmia), rubbing of the itching parts twice a day with a sponge saturated with diluted vinegar or moor-berry extract may be used. Internally potassium bromide should be given. Itching of the skin often depends upon constipation, then one should treat the latter.

[The following mixture may be recommended for cases of pruritus:

(149)

℞

Ammonii valerianici,	1.0 (gr. xvi).
Syrupi menthæ pip.,	20.0 (℥v).
Aq. tiliæ,	125.0 (℥iv).

M

S.—A teaspoonful every three or four hours (*Brocy and Jaques*). —Earle.]

Jaundice, catarrhal, passes away in a few days after using alkaline water (Vichy-Célestins, Ems-Krenchen) a tea or dessertspoonful every two hours, and from a suitable diet; no fat or heavy, sour food, as well as fruits and desserts. In the case of constipation the treatment should begin with calomel.

Jaundice of the New-born does not require any treatment.

Laryngitis. See Catarrh of the Larynx.

Laryngismus Stridulus usually develops in the rachitic or anæmic, therefore an appropriate treatment is necessary (see Rachitis). Of the symptomatic remedies the best are bromides;

to a child six months old give once or twice a day one to two grains; to a one-year-old child, double such doses.

(150)

℞

Potassii brom.,	2.0 (ʒss).
Aq. dest.,	90.0 (ʒiij).
Syr. simp.,	10.0 (ʒijss).

M

S.—Four times a day a tea or dessertspoonful (to a child five to twelve years old).

If the fits be often repeated (several times a day) then musk is given together with bromides.

(151)

℞

Tr. moschi,	15.0 (ʒss).

S.—Five to ten drops every three hours (to a child six to twelve months of age).

If there is a softened occiput, the head should be washed several times a day with a sponge wet in water of the room-temperature.

Leukæmia. A general tonic treatment, a nutritive diet and pure air; of medicines—arsenic.

(152)

℞

Liq. arsenicalis Fowlerii,	5.0 (ʒi gr. xvi).
Tr. chinæ comp.,	45.0 (ʒiss).

M

S.—Five drops three times a day, gradually increasing the dose up to ten and even to fifteen drops.

(153)

℞

Acidi arsenicosi,	0.06 (gr. i).
Ferri hydro. reduct.,	1.25 (ʒi).
Ext. trifolii q. s.	

M. ft. pil. No. 60.

S.—One to two pills twice a day after meals.

Malaria or Intermittent Fever. During the attack the sick one should stay in bed; cold to the head; sour drinks. To-

prevent the relapse of the paroxysm quinine (muriate or sulphate) in powders, capsules or solution, four or six hours before the paroxysm sets in, as many grains as the patient is years old, in two doses:

(154)

℞

Quin. muriat. 1.25 (℈i).

M. Capsules No. 6.

S.—One capsule at nine and eleven o'clock in the morning (to a child six years of age).

Quinine, being very bitter, is not only unwillingly taken by children, but is even very often vomited, therefore we welcome as an advance in the therapy of intermittent fever the invention of euquinin which although tasteless acts like quinine, but is somewhat weaker, so that its doses should be larger (one-and-a-half times). Sulphate and muriate of euquinin have no advantages in comparison with quinine, because they also are bitter.

If the tumor of the spleen remains after the paroxysms have stopped, then to prevent the relapses one should continue quinine in half-doses during some time (often up to three weeks) until the tumor of the spleen disappears.

If under the influence of quinine the spleen does not become smaller, then the quinine should be given together with piperine:—

(155)

℞

Piperini, 1.25-2.5 (℈i-ij).

Quinin. mur., 4.0 (℥i).

Ext. trifoli q. s.

M. ft. pil. No. 60.

S.—One pill three or four times a day (to a child five to eight years of age); or arsenic is resorted to:

(156)

℞

Liq. arsen. Fowleri, 4.0 (℥i).

Elix. viscer. Hoffmanii, 15.0 (℥ss).

M

S.—Five drops three times a day, increasing the dose each day by one drop until the dose reaches fifteen drops.

In some cases which do not yield to quinine, the fever sometimes ceases upon using tincture of helianthus:

(157)
℞
Tr. helianth. annuus, 30.0 (℥i).
S.—To a nursling twenty drops, to older children a teaspoonful, four to six times a day in a tablespoonful of water.

Mastitis of New-born. Priesnitz compresses in the period of swelling of the breasts; in the period of suppuration—incision and a dry dressing with salicylate (not carbolated) cotton.

Measles. Symptomatic treatment, especially of the cough (see Bronchial Catarrh).

[The treatment of uncomplicated measles is the same as that of any infectious disease: the room should be ventilated, the temperature should be 61°-65° F.; the diet—broth, milk and water with wine to drink; the body of the patient, his linen, and the bed must be kept clean. To prevent the possibility of any complications one should often wash the cavities of the nose and mouth with some antiseptic solution (two per cent. solution of boric acid). The main duty of the physician is to watch carefully the *course* and the *symptoms*, especially the course of temperature, the abnormal elevations of which should raise the suspicion of imminent complications, as *otitis*, *broncho-pneumonia*, etc. In a few days after the end of desquamation the child is given a soap bath, and if he does not cough and the fever has been absent for eight or ten days, then from fifteen to twenty days after the beginning of the disease he may be allowed to go to school (Grancher).

The *atypical* form, however, needs an energetic treatment. In the nervous form, associated with high temperature and prostration, cold baths (72°-75° F. and even 64.5° F.), provided the resistance of the patient is strong enough to stand such a bath and he bears well a moderate degree (75° F.). Therefore one should begin with 82° F. and if the patient reacts well, then the following baths are made cooler. The proper reaction on the part of the patient is indicated by the temperature, which should

fall after each bath, and by the general condition of the patient, which should improve.

In the *hæmorrhagic* form the cold bath is contraindicated. Here tonics and stimulants should be resorted to: wine, alcohol, æther, especially if there is noticed weak and quickened pulse and inconsiderable elevation of temperature. In case of broncho-pneumonia in the period of asphyxia, *blood-letting* may sometimes be of benefit* and the treatment should be the same as described in the article on treatment of broncho-pneumonia.—Earle.]

Melena Neonatorum. A quiet posture; cold compresses to the abdomen.

(158)
℞
Liq. ferri sesquichlor.,
Glycerini, āā 8.0 (℥ij).
M
S.—One drop every two to three hours.

(159)
℞
Ext. secalis cornut. aq., 1.25 (℈i).
Aq. dest., 90.0 (℥iij).
Syr. simp., 10.0 (℥ijss).
M
S.—A teaspoonful every two hours (continued not longer than two days).

Meningitis Simplex and Cerebro-Spinalis. (Simple and epidemic inflammation of the meninges). Absolute rest, during the first period; in the case of a persistent vomiting, only liquid nourishment in teaspoonful quantities and necessarily ice-cold. Ice-bag to the head; to older children—leeches behind the ears (according to the age). A laxative, and in case of vomiting calomel is the best; the doses need not be large, 0.015-0.03-0.06 (gr. ¼-gr. ½-gr. 1) according to the age, every hour if needed.

*Grancher: Measles in *Brouardel's Text-Book of Medicine*, Vol. 1.

In the event of restlessness—sodium bromide internally (see whooping cough), or morphium under the skin, for instance:

(160)
℞
Morphin. acetici, 0.09 (gr. iss).
Aq. dest., 10.0 (℥ijss).
M
S.—Five drops under the skin (to a child five to ten years of age).

Or chloral hydrate in an enema, in the same dose as used internally (i. e.—0.05-gr. i to each year). Further, derivatives are of use, as, for instance, spanish fly to the lower portion of the posterior surface of the neck (in children four or five years of age) the size of a half of a playing card.

(161)
℞
Emp. vesicatorium q. s.
Consperge camphora.
S.—Spanish fly.

Spanish fly when covered with camphor, produces blisters almost without pain, maintaining the effect eight to twelve hours.

In the period of subsidence of the acute symptoms—potassium iodide with some stimulants.

(162)
℞
Inf. rad. valerian. 1.0-2.0:90 (gr. xv-℥ss:℥iij).
Potassi iodid., 1.25 (℈i).
M
S.—A dessert- teaspoonful (according to the age) every two hours.

Meningitis Tuberculosa. In the first period—the vomiting being persistent—swallowing of ice or of cold water, ice to the head, calomel as a laxative. Later on potassium iodide internally and ointment of iodoform to the head, the hair having been cut short. For removal of the disagreeable odor of iodoform ol. eucalypti should be added to the ointment, or burned coffee, etc., for instance:

(163)

℞

Iodoformii,	4.0 (℥i).
Coffeæ tostæ pulv.,	2.0 (℥ss).
Lanolini,	30.0 (℥i).
Adeps,	4.0 (℥i).

M

S.—Rub a teaspoonful on the head twice a day (for a nursling half a teaspoonful).

Micturition, Painful. See Painful Micturition.

Migraine. See Headache.

Mouth, its diseases. See Diseases of the Mouth.

Muco-membranous Enteritis. See Enteritis muco-membranous.

Mumps or Epidemic Parotitis. A conservative treatment; for the favorable course of the disease it sufficies to apply dry warmth and cover the tumor with camphor oil and potassium iodide salve.

[In the treatment of epidemic parotitis one should try to prevent the appearance of orchitis. For this purpose the patient should remain at home and be forbidden all kinds of mental and physical overexertion for a few days after the disappearance of the tumor (Catrin). The mouth should be cleansed with boric acid solution.—Earle.]

[Myxœdema. The treatment of myxœdema consists in administering internally preparations of the thyroid gland, such treatment being based on the pathology of this disease, the atrophy of the gland. One may give the raw thyroid gland of the sheep (half of the gland twice a day) or the specific substance of this gland—thyroiodine (thyroidin) of Baumann. One may use thyroidin, ten grains of which correspond to sixteen grains of the fresh sheep-gland and is given internally in pills or powders in one and a-half grain doses one to six times a day.

Even in large doses thyroidin does not produce toxic effects, provided the preparation is fresh; but in the contrary case there may arise dangerous complications.

The prolonged use of thyroidin leads to so-called *thyroidism*,

a symptom complex consisting in loss of weight of the body, wasting, sweating, palpitation of the heart, elevation of the temperature, restlessness and excitement. The treatment should be in such cases stopped.—Earle.]

Nephritis acuta. During acute inflammation of the kidneys the patient must stay in bed. The diet must be concentrated; the less the urine the more saturated the same is. In the majority of cases the best food is milk, but in the case of too small quantities of urine (for instance, if no more than thirty grams, to each year, is voided), then only mucilaginous soups and water.

If the nephritis begins very acutely (fever up to 39 to 40° C. (102.2 to 104° F.) with scanty urine, rich with blood), dry cupping, or for older children, wet cups to the lumbar region. Internally laxatives (calomel especially in case of inclination to vomiting; infus. lax. Wien.), then digitalis.

(164)

℞

Hydrarg, chlor. mit., 0.09-0.36 (gr. iss-gr. vi).
Sacchar., 8.0 (℥ij).

M. ft. pulv. No. 6-8.

S.—One powder every hour if needed.

(165)

℞

Inf. laxat. Wien., 90.0 (℥iij).
Syr. rub. idæi, 10.0 (℥ijss).

M

S.—A tea- dessert- tablespoonful (according to the age) every two hours if needed.

(166)

℞

Inf. herbæ digital., 0.2-90.0 (gr. iijss:℥iij).
Liq. kali acetat., 2.0 (℥ss).
Syr. simp., 10.0 (℥ijss).

M

S.—Under four years of age a teaspoonful, to older ones a dessertspoonful, every two hours.

If the quantity of blood is great, yet there is little urine, the same being turbid, then alkalies should be administered.

(167)

℞

Cremoris tartari,	2.0 (ʒss).
Aq. dest.,	90.0 (ʒiij).
Syr. simp.,	10.0 (ʒijss).

M

S.—A tea or dessertspoonful every hour or two.

During nephritis one should avoid constipation; cream of tartar not only acts as a diuretic, but is also a mild laxative. If, despite this, the patient continues suffering from constipation, then it is better to use:—

(168)

℞

Sodii sulphuric,	2.0 (ʒss).
Aq. dest.,	90.0 (ʒiij).

M

S.—Like the preceding.

To drink: Ems (Krenchen) one to one-and-a-half glasses during twenty-four hours, Vichy, etc.

In the latest period of nephritis, when the urine is voided in sufficient quantities, but contains blood and much albumen, then mild astringents or sesquichloride of iron (but not simultaneously) and also ergot.

(169)

℞

Decoct. fol. uvæ ursi,	4.0-8.0:90.0 (ʒi-ʒij:ʒiij).
Syr. simp.,	10.0 (ʒijss).

M

S.—One tea or dessertspoonful every hour or two hours.

(170)

℞

Liq. ferri sesquichlor,	gtts. xij.
Aq. dest.,	30.0 (ʒi).
Syr. simp.,	10.0 (ʒijss).

M

S.—A tea or dessert or tablespoonful four times a day after meals (according to the age).

(171)

℞

Inf. secal. cornut.,	2.0:90.0 (℥ss:℥iij).
Syr. simp.,	10.0 (℥ijss).

M

S.—A tea or dessertspoonful every two hours.

Against dropsy—hot baths (in the case of fever pack in wet sheets and woolen quilts; the patient is placed in warm water (97° F.) and by gradually adding hot water during twenty to thirty minutes the temperature is thus brought up to 101° F., then the patient is kept one or two hours in a warm blanket. The baths are repeated daily.

In case of uræmia (headache, vomiting, convulsions)—cold to the head, packs in wet sheets and quilts (or hot baths), laxatives (calomel, infus laxat. Wiennensis), leeches to the ears, without sustaining the hæmorrhage, during convulsions—inhalations of chloroform.

If the pulse remains full during the convulsions, then subcutaneous injections of pilocarpin:

(172)

℞

Pilocarpini muriat.,	0.06 (gr. i).
Aq. dest.,	4.0 (℥i).

M

S.—To inject under the skin, as many drops as the patient is years old.

If uræmia occurs with symptoms of heart-failure (weak pulse, coolness of the limbs, slight cyanosis, then the injection of pilocarpin, as well as hot baths and leeches, are contraindicated; stimulants are here suitable (see Infantile Cholera).

Night-Terror. (nightmare). Children liable to night-terror should not be excited by tales of frightful content. In anæmia and general nervousness—the appropriate general treatment. Symptomatically against terror quinine at night, as many grains as the patient is years old.

Nocturnal Incontinence of the Urine. See Incontinence of the Urine.

Noma or water-cancer. As noma develops in the majority of cases from stomacace, always affecting exhausted children, then the preventive treatment should consist in administering to the child a nutritive diet and wine, as well as potassium chlorate as a remedy:

(173)
℞
Decoct. cort. chinæ regiæ ex. 1.0:90.0 (gr. xvi:℥iij).
Potassi chlor. 2.0 (℥ss).
M
S.—Every two hours a tea or dessertspoonful (for a child two to six years of age).

The diet should be milk, soft eggs, meat. If ulceration of the cheek has already commenced, then one must try to stop the further spreading of the process by means of powdering the ulcer with potassium chlorate.

(174)
℞
Potassi chlor., 15.0 (℥ss).
S.—Powder the ulcer three times a day.

If under the influence of such a treatment continued twenty-four hours the stench decreases considerably, then the powdering should be continued twenty-four hours more, after which a rinsing alone may be sufficient. If, however, the ulcer continues to spread further and the stench becomes still more intense, then one should without further delay cauterize the ulcer by means of strong nitric acid.

(175)
℞
Acid nitrici pur., 15.0 (℥ss).
S.—For cauterization.

The gangrenous parts are first removed, under chloroform, from the surface of the ulcer by means of a sharp spoon, then a glass-rod (or a wooden, but not a metallic, one) is dipped in the acid and the drop remaining on the end is transferred to the

sore; this is to be repeated several times until the whole surface of the ulcer becomes covered with an eschar*.

Pityrasis Linguæ—a map-like desquamation of the tongue does not require any treatment, unless it is accompanied by fissures of the mucous membrane of the tongue. In the latter case mucilaginous solutions or astringent preparations are used:

(176)
℞
Mucil. gum. arab., 15.0 (℥ss).
S.—To pencil the mouth.

(177)
℞
Tr. ratanhiæ, 2.0 (℥ss).
Aq. dest., 100.0 (℥iij-℥ijss).
M
S.—To rinse the mouth.

Nose-bleed. Cold compresses to the bridge of the nose (glabella) and to the occiput; tamponade of the nose with cotton wet with a solution of sesquichloride of iron:

(178)
℞
Liq. ferri sesquichlor., 1.25 (℈i).
Aq. dest., 60.0 (℥ij).
M
S.—Externally.

If the hæmorrhage does not stop in two minutes, then a new tamponade must be made. In the case of a very persistent hæmor-

*There have been reported some very successful cases of treatment of noma with pyoktanin cœruleum. Such a case was mentioned by K. Poliakoff, in a 13-year old boy. Even the fourth application of a 1% aqueous solution of pyoktanin cœruleum to the gangrenous detritus which covered the ulcer of the lip, checked the further spreading of the ulcer; the offensive odor almost disappeared; on the next day the ulcer was again soaked with the same solution (a piece of cotton wet in the solution was applied to the ulcer), and toward the third morning the ulcer cleaned up. An ulcer of the inner surface of the cheek also yielded quickly to the same treatment. Then pyoktanin was changed for dermatol and the ulcer began to heal up (by a scar). Painting with pyoktanin was accompanied by retardation of the pulse.—G. B. II. (*Medic. Obozr.*, 1899. N. 8.)

rhage a tamponade of the whole posterior passage of the nose must be made by means of Belocq's canula.

To prevent frequent relapses of the hæmorrhage the patient must not walk with bare head in the sunshine and should often cool the head with water. In the presence of anæmia—liq. ferri sesquichlor. internally in half to three drop doses, according to the age, three times a day after meals. Against periodical hæmorrhages—quinine. Nose-bleed depends very often upon small denudations mostly located on the nasal septum. The best remedy will in such cases be cauterization of the erosions with silver nitrate.

Œdema of the Glottis. In the case of œdema of the glottis one should not lose much time in using laxatives and derivants to the skin and bowels; in heart-lesions digitalis and scarifications of the œdematous mucous membranes, or tracheotomy.

Œdema of the Lungs. Here are indicated stimulants and derivants to the skin and bowels; in heart lesions digitalis and strophanthus:

(179)
℞
Liq. ammon. anis,
Ætheris sulph., āā 4.0 (℥i).
M
S.—Five drops every half an hour.

(180)
℞
Camphor. tritæ, 0.36-0.72 (gr. iv-gr. xij).
Sacchar., 3.0 (℈ij).
M. ft. pulv. No. 12.
S.—One powder every two hours.

(181)
℞
Camphor., 0.5 (gr. viij).
Spts. vini,
Aq. dest., āā 5.0 (℥i gr. xvi).
M
S.—Inject under the skin half or one syringeful.

(182)

℞

Tr. strophanthi, 8.0 (℥ij).

S.—One to five drops pro dosi according to the age, every two hours.

(183)

℞

Inf. digital., 0.2:90.0 (gr. iijss:℥iij).

Syr., 12.0 (℥iij).

M

S.—A tea or dessertspoonful every two hours.

(About derivative and revulsive methods see the article on broncho-pneumonia).

Onychia. In the case of ulcerous inflammation of the nail, accompanied by sanious discharge, the best remedy is powdering with plumbum nitricum, once a day, without separating the scab or the crusts formed after the preceding powder.

Ophthalmia of the New-born. See Blenorrhœa of the Eyes in the New-born.

Orchitis. If due to mumps, then it quickly passes away with a quiet posture of the patient, the scrotum being elevated (a pillow is put underneath).

Otitis. In the case of acute inflammation of the ears associated with severe pains, warmed oil alone or with morphin or cocain solution, must be applied to the external ear.

(184)

℞

Ol. amygdal. dulc., 10.0 (℥ijss).

Morph. acetat., 0.02 (gr. 1-3).

M

S.—Half a teaspoonful to be poured into the ear (warm).

(185)

℞

Cocain muriat., 0.02 (gr. 1-3).

Aq. dest., 4.0 (℥i).

M

S.—Pour a few drops in the ear.

In the period of appearance of a discharge—syringing the

ear with a three per cent. solution of boric acid, or placing in the ear a few drops of five or ten per cent. solution of carbolic acid in glycerine (aqueous solutions of such a strength cannot be applied, because they burn severely). In the case of an insufficient flow of the discharge—dilation of the opening in the tympanum.

Oxyuris Vermicularis. See Worms.

Painful Micturition. Requires different methods of treatment according to the causes. In new-born in the case of urinary sand—alkalies (two per cent. solution of sodium bicarbonate, half a teaspoonful every two hours); in children under one year of age, phimosis and adhesion of the prepuce to the glans penis requires separation of the prepuce from the latter. In the case of complete retention of the urine in new-born because of an inherited occlusion of the urethra—an operation. In older children with balano-posthitis—forced separation of the prepuce from the glans, denudation of the latter to remove the smegma and daily syringing under the prepuce with plain cool water and then covering the glans with oil. Recovery sets in in two or three days.

In girls (vulvitis and vulvo-vaginitis, fluor albus)—daily washing with alum solution (a teaspoonful of alum to a glass of water). For the night time an oblong piece of cotton a finger thick, soaked with a two per cent. tannin solution, is put between the labia. If the pus comes from the vagina, then mild syringing with a weak solution of zinc:

(186)

℞

Zinci sulph.,	0.5 (gr. viij).
Aq. dest.,	240.0 (℥viij).

M

S.—Apply externally.

Or introducing a gelatinous iodoform suppository:

(187)

℞

Iodoformi,	0.72 (gr. xij).
Gelatin,	2.0 (℥ss).

M. ft. suppos.

S.—Introduce once a day into the vagina.

Attention should be given if there are ascarides. In other cases the primal cause is scrofula or anæmia.

In urethritis of the external orifice of the penis—cauterization with lapis, and to remove the pain an immediate application of cold compresses for one or two minutes.

If the urine be very acid, then alkalies, alkaline mineral waters, restriction of meat.

For the *catarrh of the bladder* (cystitis)—in acute cases—potassium chlorate (see Diseases of the Mouth), Priessnitz' compresses to the lower portion of the abdomen, warm baths, milk diet, removal of the cause (vulvitis, turpentine internally, spanish fly).

In chronic forms of cystitis—in the case of a stone in the bladder—an operation, and if the cause be uncertain (rare), then astringents internally:

(188)

℞

Acid tannici in one grain or a grain and a half doses every two hours,

Or

(189)

℞

Alumin. crudi,	1.0 (gr. xvi).
Aq. dest.,	100.0 (℥iij ℨijss).

M

S.—A tea or dessertspoonful every two hours.

In older children lavage of the bladder with warm solutions of antiseptic remedies (boric acid two per cent. solution).

Paralysis, Diphtheritic. Tonic treatment with good nourishment and fresh air. Internally or hypodermically strychnin preparations. See Angina, Diphtheritic.

Paralysis, Infantile. See Infantile Paralysis.

Paraphimosis. Reduction of the glans penis after the previous compression of the same with the fingers in order to remove its œdema and simultaneously its volume. If reduction fails, then one must cut the strangulating ring. After the reduction is completed applications of Aq. Goulardi.

Parotitis epidemica. See Mumps.

Pellosis, Rheumatica. See Purpura.

Pemphigus of the New-born. Powder with calomel, *per se*.

Pemphigus Syphiliticus. The general anti-syphilitic treatment and also powdering with calomel.

Pericarditis. Cold poultices and spanish fly to the heart. In the late stages—diuretics and nutritive diet, wet compresses digitalis:

(190)
℞
Inf. digital., 0.2:90.0 (gr. iijss:℥iij).
Liq. kali acetat., 2.0 (℥ss).
Syr., 10.0 (℥ijss).
M
S.—A tea or dessertspoonful every two hours.

Peritonitis, Acute: Perityphlitis—Appendicitis. Absolute rest and diet; ice internally and to the abdomen; leeches to the place of the severest pain; opium internally until narcosis.

(191)
℞
Tr. opii, 4.0 (℥i).
S.—As many half-drops as the patient is years old, until sleep sets in. The medicine must be discontinued as soon as contraction of the pupils appear.

The treatment with cold and opium continues as long as there is marked pain and fever; then Priessnitz' poultices. Laxatives and enemata, despite the constipation, are contraindicated. They can be applied only when apparent signs of inflammation are absent, and when there are signs of accumulation of fæcal matter in cæcum, i. e., in the so-called typhlitis stercoralis.

[The indicated treatment of perityphlitis, or rather appendicitis, may be looked upon as only a temporary one, to give the

patient some relief; the real treatment of appendicitis, which follows from the pathology of this disease, must be a surgical one and, according to some authors, only a surgical one; for instance *Dieulafoy* (Paris) declares that "*there is no therapeutic treatment of appendicitis*" and that if each case is operated there will be no deaths from appendicitis and its complications, as acute general peritonitis, subacute pyæmia of the peritoneum, localized peritonitis, burrowing abscesses of the liver, alveolar abscesses of the liver." Dieulafoy who has done very much in Europe for the proper understanding of the pathology and clinical course of appendicitis, goes still farther, claiming that "*from appendicitis one should not die.*" The course of treatment of appendicitis in its different stages (acute, subacute, chronic, complicated) is a leading question of the day, being the subject of discussion in meetings, journal articles, monographs, etc. We append here the views of one of the most prominent authorities on this point, Prof. A. J. Ochsner, as formulated by him at the Fifty-fourth Annual Session of the *American Medical Association* (1903), as well as in numerous articles published in different periodicals. Ochsner's conclusions (or as he says "suggestions") regarding the treatment of appendicitis are the following:

1. "Patients suffering from chronic recurrent appendicitis should be operated on during the interval.

2. Patients suffering from acute appendicitis should be operated on as soon as the diagnosis is made, provided they come under treatment while the infectious material is still confined to abdomen, if a competent surgeon is available.

3. Aside from insuring a low mortality this will prevent all serious complications.

4. In all cases of acute appendicitis without regard to the treatment contemplated the administration of food and cathartics by mouth should be absolutely prohibited and large enemata should never be given.

5. In case of nausea or vomiting or gaseous distention of the abdomen, gastric lavage should be employed.

6. In cases coming under treatment after the infection has extended beyond the tissues of the appendix, especially in the presence of beginning diffuse peritonitis, conclusions four and

five should always be employed until the patient's condition makes operative interference safe.

7. In case no operation is performed neither nourishment nor cathartics should be given by mouth until the patient has been free from pain and otherwise normal for at least four days.

8. During the beginning of this treatment not even water should be given by mouth, the thirst being quenched by rinsing the mouth with cold water and by the use of small enemata. Later small sips of very hot water frequently repeated may be given and still later small sips of cold water. There is danger in giving water too freely, and there is great danger in the use of large enemata.

9. All practitioners of medicine and surgery, as well as the general public, should be impressed with the importance of prohibiting the use of cathartics and food by mouth, as well as the use of large enemata, in cases suffering from acute appendicitis.

10. It should be constantly borne in mind that even the slightest amount of liquid fluid of any kind given by mouth may give rise to dangerous peristalsis.

11. The most convenient form of rectal feeding consists in the use of one ounce of the various concentrated liquid predigested foods in the market, dissolved in three ounces of warm normal salt solution introduced slowly through a soft catheter, inserted into the rectum a distance of two to three inches.

12. This form of treatment cannot supplant the operative treatment of acute appendicitis, but it can and should be used to reduce the mortality by changing the class of cases in which the mortality is greatest into another class in which the mortality is very small after operation."

"In regard to the first point," continues Ochsner, "I wish to say here, as I have said everywhere before, so long as the infection is within the appendix when I make the diagnosis, I operate immediately if I can obtain the consent of the patient. But there sometimes happen cases when the surgeon cannot tell positively that the patient will get well if he be operated at once, because such cases give a mortality of fifteen to thirty per cent. under the hands even of best surgeons. For such cases the con-

servative treatment is the best and must consist in *washing out the stomach, giving* absolutely *no cathartics* and *no food* of *any kind by mouth* and giving *no large enemata* until the patient has been normal for at least four days. With such a treatment ninety-seven per cent. of all such cases (perforative and gangrenous appendicitis) will get well."*—EARLE.]

PERITONITIS CHRONICA. Nutritive diet, wine, remaining in bed. Wet compress to the abdomen; ointments:

(192)

℞

Potassii iodid.,	1.25 (℈i).
Iodinii pur.,	0.12 (gr. ij).
Adeps,	30.0 (℥i).

M

S.—Rub on the abdomen twice a day.

Internally potassium iodide one, two or three grains to each year.

(193)

℞

Potassii iodid.,	2.0 (℥ss).
Aq. dest.,	90.0 (℥iij).

M

S.—A dessertspoonful four times a day (to a child five or ten years of age).

If the stomach be in good condition, then iodide of iron.

(194)

℞

Syr. ferri iodat.,	
Syr. simp.,	āā 15.0 (℥ss).

M

S.—As many drops as the patient is years old, three or four times a day.

PERTUSSIS. See Whooping-cough.

PHARYNGITIS, ACUTE. See Angina.

PLEURISY. Against the pains—spanish fly, and, in strong

*Journ. Am. Med. Assoc., 1903, p. 546.

children—leeches; for the cough—narcotics, Priessnitz compress (the area of the blister caused by the spanish fly is covered with a cloth smeared with cerate). In the period of absorption of the exudate—repeated vesication (spanish flies), nutritive diet and wine. In the case of a purulent exudate—incision of the chest wall. Regarding thoracentesis (puncture of the chest wall), this is indicated only in the beginning of the disease, namely in the case of enormous accumulation of the exudate, when the patient is unable to accommodate himself to the diminution of the respiratory area of the lungs, suffering, therefore, from dyspnœa which is dangerous to life.

In cases of an idiopathic, so-called serous, pleurisy due to cold it is best to administer from the very first sodium salicylate, for instance 0.2 to 0.25 (gr. iijss-gr. vi) pro die, i. e., to a ten-year-old child 2.0 (ʒss) pro die; to a five-year-old child 1.0-1.25 (gr. xvi-ʒi) etc. The effect in the way of disappearance of the fever and improvement of the general condition and pain, should appear toward the end of the week.

Pulmonary Atelectasis. See Atelectasis of the Lungs.

Pneumonia, Catarrhalis. See Broncho-pneumonia.

Pneumonia, Crouposa The treatment is a symptomatic, expectant one. If the temperature be too high—antipyretics, for instance, phenacetin, antipyrin and antifebrin; phenacetin is the best, as it is least harmful to the heart and therefore does not produce collapse in moderate doses. The doses of phenacetin are the same as of antipyrin, and antifebrin is given in one-half the quantity. The former two are given pro die so many decigrams as the patient is years old, divided into three portions; but, to avoid a possible collapse, one should before each new dose measure the temperature, and give the remedy only when the temperature is higher than 39.5° C. (103.1° F.).

(195)

℞

Phenacetini, 2.0 (ʒss).

M. ft. pulv. No. 6.

S.—One powder three times a day, if the temperature does not decrease below 39° C. (102.2° F.)—to a child ten years of age.

(196)
℞
Antifebrini, 0.72 (gr. xii).
Sacchar., 1.25 (℈i).
M. ft. pulv. No. 6.
S.—Like the preceding (to a child aged eight years).

For the dry cough—narcotics (see Laryngitis); against pain in the side—Priessnitz' compress, mustards. In the case of a feeble pulse—wine and other stimulants; valerian drops, liq. ammoni anis, camphora, musk.

[Baths, sponging, packs and, in general all methods, spoken of in the article on the treatment of typhoid fever and broncho-pneumonia, are applicable also in this disease; therefore the reader is referred to the above mentioned descriptions. (See Typhoid Fever and Broncho-pneumonia in this Therapeutic Index).—Earle.]

Poliomyelitis Anterior Acuta. See Infantile Paralysis.

Prolapsus Recti. The treatment of the cause, according to circumstances; removal of constipation or a straining diarrhœa, or a violent cough. Reduction. The bowels should be moved in a standing or lying posture. Enemata once a day consisting of cold water or solutions of tannin.

(197)
℞
Tannini, 0.6 (gr. x).
Aq. dest., 60.0 (℥ij).
M
S.—Two tablespoonfuls to an enema.

Internally nux vomica:

(198)
℞
Tr. nucis vom., 8.0 (℥ij).
S.—One to three drops a day (to children one to five years of age).

(199)

℞

Ext. nucis vom. aq., 0.06-0.12 (gr. i-gr. ij).
Emuls. amygdal. dulc., 90.0 (℥iij).

M

S.—A dessertspoonful every three hours (to a child two to five years of age).

There are two kinds of extract of nux vomica; the aqueous and alcoholic. The latter is three times stronger than the former. Ext. nucis vomicæ aqueous. is held to be five times stronger than the tincture, thus there may be given pro die not more than 0.02 (gr. 1-3), and pro dosi 0.005 (gr. 1-12). In the case of a restless sleep, and tremors during the sleep, the medicine should be discontinued. In view of the possibility of the cumulative action, it is better to begin with one-third of the usual dose, and not to give the same too long.

In persistent cases subcutaneous injections of ergotin in the tissues surrounding the anus are recommended:

(200)

℞

Ergotini, 0.12 (gr. ij).
Glycerini, 4.0 (℥i).

M

S.—Six to twelve drops to each injection once a day (to children two to five years of age).

Prurigo.

(201)

℞

Ol. rusci,
Sapon. viridi, āā 30.0 (℥i).
Spts. vini rectf., 60.0 (℥ij).

M

S.—Rub the itching places three times a day.

Soda-baths are also useful; to each two pails of water a tablespoonful is used; the temperature of the bath should be 27° R. (91° F.); patient to stay therein ten minutes.

Pseudo-croup. See Laryngitis.

Pseudo-leukæmia. A general tonic treatment. Of medicines only arsenic may be used with some hope of a success, in large doses, gradually increasing the dose up to one to ten drops of Fowler's solution, pro dosi, twice or three times a day.

Pulmonary Gangrene. See Gangrene of the Lungs.

Purpura and Werlhof's Disease. In the various forms of purpura it is most necessary for the patient to stay in bed, as well as to have a nutritive but easily digestible diet—meat, eggs (soft), milk. Sour drinks may be allowed only in cases occurring without abdominal pain.

Internally: Liq. ferri sesquichlor. (See Anæmia), secale cornutum, plumbum aceticum.

(202)

℞

Inf. secal. cornut.,	1.25 : 90.0 (℈i : ℥iij).
Syr. simp.,	10.0 (℥ijss).

M

S.—A dessertspoonful every two hours.

(203)

℞

Plumbi acetat.,	0.12 (gr. ij).
Sacchar.,	2.5 (℈ij).

M. ft. pulv. No. 12.

S.—One powder every three hours.

(204)

℞

Ext. hydrast. canaden. fl.,	15.0 (℥ss).

S.—Ten to fifteen drops three times a day (to children aged five or ten years).

In the cases of nose bleed—tamponade.

Rachitis, (Rickets)—English Disease. In the preventive treatment, a dry room; pure air (walking in fresh air); diet corresponding to age; children from six months to one year of age should be given breast-milk, meat-juice several times a day in half and whole teaspoonful doses; carbohydrates (starch and sugar) are strongly prohibited. Children one to three years of age may be given meat and milk; bread only together with some other food; sugar and potatoes must be forbidden.

Of internal remedies, depending on the condition of the stomach, cod-liver oil, bitter remedies, lime, phosphorus.

If the rachitic child be thin and prone to constipation, then cod-liver oil, or lipanin, are the best:

(205)

℞

Ol. jecoris aselli flav., 60.0 (℥ij).

S.—Half a teaspoonful (under one year of age) or a whole teaspoonful (older than a year) twice or three times a day.

(206)

℞

Lipanini, 60.0 (℥ij).

S.—Like the preceding.

Lipanin, or artificial cod-liver oil, is nothing but the best sort of provance oil (ol. provinciale), in which there is diluted six per cent. of oleinic acid which does not change the taste of the oil. This remedy is much more expensive than cod-liver oil, but has the advantage of being very palatable and not producing eructations.

In obese children iron is better; in case of constipation—in combination with rhubarb.

(207)

℞

Tr. ferri pomati, 6.0 (℥iss).

Tr. rhei vinosi, 15.0 (℥ss).

M

S.—Six to ten drops three times a day (to a child six to twelve months of age).

In case of inclination to constipation:

(208)

℞

Ferri lactici, 0.24-0.48 (gr. iv-viij).

Sacchar., 2.5 (℈ij).

M. ft. pulv. No. 12.

S.—Three powders a day (to a child from three months up to three years old).

(209)

℞

Ferri carbon. sacch., 0.36-0.72 (gr. vi-xij).
Sacchar., 2.5 (℈ij).

M. ft. pulv. No. 12.

S.—Three powders a day (to children from half a year to three years old).

If it be desirable to avoid the astringent action of iron, then it is better to give:

(210)

℞

Ferri pyrophos. c. ammon. cit. 0.18-0.36 (gr. iij-vi).
Sacchar., 2.5 (℈ij).

M. ft. pulv. No. 12.

S.—One powder three times a day (to a child half a year to three years).

Or hypophosph. of lime is added to iron, it then acts as a slight laxative:

(211)

℞

Ferri carbon. sacch., 0.36-0.72 (gr. vi-xij).
Calc. pyrophos., 0.72-1.5 (gr. xij-℈i).

M. ft. pulv. No. 12.

S.—Three powders a day (to a child half-a-year to three years of age).

In the case of a bad appetite and indifferent activity of the intestines, while constipation prevails, but diarrhœa also occurs, the following mixture is good:—

(212)

℞

Elix. roborans Whytt 15.0 (℥ss).

S.—Six to twelve drops three times a day (to a child half-a-year to three years old).

Lime preparations are recommended as an addition to the milk for bottle-fed children disposed to diarrhœa. There is usually added a tablespoonful of lime water to a glass of diluted milk.

Phosphorus is especially indicated in rachitis, when there prevail symptoms on the part of the nervous system, i. e., in children liable to convulsions and laryngismus stridulus. It is prescribed together with cod-liver oil:—

(213)

℞

Phosphori,	0.01 (gr. 1-6).
Ol. morrhuæ,	100.0 (℥iij-℥ijss).

S.—A teaspoonful once or twice a day.

Or

(214)

℞

Lipanini,	30.0 (℥i).
Phosphori,	0.01 (gr. 1-6).
Sacchar. alb.,	
Pulv. gum arab.,	āā 15.0 (℥ss).
Aq. dest.,	40.0 (℥i-℥ijss).

M

S.—One to two teaspoonfuls a day.

Of external remedies—in the summer—salt baths, a quarter or half a pound of salt (common, sea-salt or Kreitznach) to a pail of water (91° F.); patient to stay in water fifteen to twenty minutes (but not to the point of chilliness). The baths should be given every other day in the evening, and if they excite sleeplessness, then in the morning. In the winter time sponging of the whole body, excluding the head, with plain water or alcohol (a dessertspoonful to a quart of water) in the morning and evening. From applying salted alcohol an itching papular eczema may appear, especially on the legs—then the sponging is to be discontinued for a while.

Besides the above it is often necessary to resort to symptomatic remedies on account of catarrhs of the respiratory organs and intestines, laryngismus stridulus, etc.

Renal Sand. Mixed diet; not to eat very much; as little bread as possible and, in general, sparingly of carbohydrates and sweet things. Wine is to be absolutely forbidden, as well as all sour food, except fruits. Internally—alkalies, for instance, Vichy, several tablespoonfuls a day, in the intervals between the meals.

Rheumatism, Acute. See Acute Rheumatism.

Retropharyngeal Abscess. See Abscess Retropharyngeal.

Sand, Renal. See Renal Sand.

Scabies.

(215)

℞

Styracis liquidi,	30.0 (℥i).
Ol. provinciale,	15.0 (℥ss).

M

S.—To rub on the itching places twice a day, after the previous ointment is washed off.

After three days using of the salve the patient should take a general (soap) bath and after that should rub in the same salve during three days more. With the second bath the treatment is usually over.

(216)

℞

Sulphuris sublimat.,	
Ol. fagi,	āā 30.0 (℥i).
Saponis viridi,	
Adeps,	āā 60.0 (℥ij).
Cretæ alb. pulv.,	4.0 (℥i).

M

S.—Apply to the rash three times a day.

Scarlet Fever *Scarlatina.* If a child becomes sick with scarlet fever of mild severity, the temperature being not higher than 40° C. (104° F.), then besides ordinary care no treatment is needed. If the beginning of the disease be accompanied by constipation or diarrhœa (usually a fœtid one) then it is well to give a laxative, for instance, calomel 0.05 (gr. i) pro dosi, every hour if needed, i. e., until the appearance of a green, calomel stool, but no more than six such powders, and if the bowels do not move sufficiently, then a tablespoonful of castor-oil should be given. For the sake of diminishing the sense of tension of the skin, as well as of the itching, and also in view of the subsequent desquamation, the whole body is covered twice a day with olive oil warmed to the temperature of the room; and if the eruption appears slowly and unequally, then—with hot oil (104° F.). For syringing of the mouth and gargling—boric

acid, sodium salicylate, etc., a teaspoonful to a glass of water; to children who cannot gargle—the mouth should be wiped out with the same solutions. Since nephritis usually sets in not later than on the twenty-first day, the patient should not leave his bed up to the end of the third week, even in the mildest cases; and the room can be left by the patient only after the end of the desquamation.

If the fever be very high, and especially if the same be accompanied by delirium and other nervous evidences, then an antipyretic method of treatment is indicated, with external and internal remedies, of which the former are to be preferred.

Of external remedies we use sponging of the whole surface of the body with water of the temperature 82° F. every two or three hours, as well as luke-warm baths, which are made gradually cooler; the patient is put in water of 104° F. and for the twenty or thirty minutes that the patient is therein the temperature is gradually lowered, by adding cold water, down to 86° or 82° F. The duration of the bath depends upon the general condition of the patient and that of his heart. If the face grows pale or there appear dizziness, weakness of the pulse and a sense of cold then the bath should be discontinued. According to the effect the bath is repeated twice or thrice a day or oftener. Before the bath a teaspoonful or more of wine should be given.

In grave cases, when the temperature, notwithstanding the baths, either does not subside, or but very little, then antipyretics should be given, as, antipyrin, antifebrin, phenacetin. In the presence of a feeble and frequent pulse one must be very careful with the use of such drugs, and even in a good condition of the heart activity these remedies should be given with wine and should be commenced in small doses. The action of these drugs should be watched by the thermometer every two hours, so that the dose can be repeated if no decrease in the temperature be noted.

Of these remedies antipyrin and phenacetin are given in the same doses, in one-half as many grains as the patient is years old, every two hours until the desired action; antifebrin, however, is used in one-fourth quantities as to the child's age.

Of these three remedies, in my opinion, phenacetin is to be preferred, it is better than antipyrin by being tasteless and by not producing vomiting, which is often produced by antipyrin, and which is in comparison with antifebrin less poisonous.

(217)

℞

Phenacetini, 0.25-0.35 (gr. iv-gr. vi).
Such powders No. 12.

S.—One powder every hour if needed (to a child eight to twelve years old).

German authors advise doses about three times larger, but, in my opinion, such a method of treatment should be held as hazardous; it is better gradually to increase the dose in the case of need; and utmost care should be taken while using antifebrin.

In desperate cases when high fever does not yield to the above-named remedies, while severe nervous symptoms appear in the form of coma or grave excitement and convulsions, the pulse being very much accelerated—then drenching with cold water of 68° to 63° F., and stimulants internally, are employed. If a weak pulse be associated with cold and slightly cyanotic limbs (symptoms of near death), then the drenching is contraindicated, and stimulants should be given, as wine (half a tea or dessertspoonful of port or madeira every hour, or brandy in one-half such doses), musk, ammonium carbonate, camphor, etc., for instance:

(218)

℞

Moschus orientalis,
Ammon. carb., āā 0.12-0.72 (gr. ij-xij).
Sacchar., 2.5 (℈ij).

M. ft. pulv. No. 12.

S.—One powder every hour (to children one to ten years old).

(219)

℞

Camph. tritæ, 0.12-0.36 (gr. ij-vi).
Flores benzoës, 0.24-0.72 (gr. iv-xij).
Sacchar., 2.5 (℈ij).

M. ft. pulv. No. 12.

S.—One powder every two hours (to a child one to ten years of age).

(220)

℞

Flores benzoës, 0.6 (gr. x).
Tr. aromat., 15.0 (℥ss).

M

S.—Five to twenty drops every two hours (to a child one to ten years of age).

(221)

℞

Inf. rad. valerian, 1.0-2.20:90.0 (gr. xvi-℥ss:℥iij).
Liq. ammon. anis, 1.0-2.0 (gr. xvi-℥ss).
Syr. simp., 10.0 (℥ijss).

M

S.—A tea or dessertspoonful every hour (to a child one to ten years of age).

In the case of cyanosis and coolness of the extremities—subcutaneous injections:

(222)

℞

Camph. tritæ, 1.0 (gr. xv).
Spts. vini,
Aq. dest., āā 10.0 (℥ijss).

M

S.—One-quarter to a whole syringeful, according to the age, twice or three times a day.

(223)

℞

Acid. benzoic, 1.0 (gr. xvi).
Spts. vini. dil., 20.0 (℥v).

M

S. Like the preceding.

(224)

℞

Æther. sulph., 15.0 (℥ss).

S.—A quarter or a half of a syringeful twice or three times a day.

If violent fever be accompanied by faintly-developed rash, then stimulating or irritating warm baths with mustard (to a small bath one should take a tablespoonful of mustard; to an average child-bath two or four tablespoonfuls), or packs in a sheet soaked with a mustard solution (two tablespoonfuls of mustard is mixed on a plate with water, and then the whole mass is mixed in a wash-basin with water of a common temperature (that of the room). The sheet is saturated in the water, is squeezed out and the child wrapped in the same up to the shoulders and after that a woolen blanket is applied; in such a Priessnitz' compress the child remains about an hour.)

In the case of severe inflammation of the throat or of the appearance of diphtheritic exudate—besides gargling (in small children—wiping and syringing) spraying is administered from a steam-atomizer, with two per cent. solution of sodium salicylate or a five per cent. solution of sodium benzoicum, or with lime water (one part to two parts of distilled water) several times a day, and besides this parenchymatous injections of three per cent. solution of carbolic acid in half-syringe doses into each tonsil once a day. Internally sodium benzoicum in ten grains doses (pro die) to each year:

(225)
℞

Sodii benzoici,	6.0 (ʒiss).
Aq. dest.,	90.0 (ʒiij).
Tr. menth. pip.,	m. ij.
Syr. aurant. cort.,	10.0 (ʒijss).

M
S.—A tea or dessertspoonful every hour or two hours.

(226)
℞

Magnesiæ sulphurosæ,	
Ac. sulphurosæ,	āā 4.0 (ʒi).
Aq. dest.,	90.0 (ʒiij).
Syr. cort. aurant.	10.0 (ʒijss).

M.
S.—A tea or dessertspoonful every one or two hours.

[Cases complicated with diphtheria—determined clinically or bacteriologically—should be treated by the subcutaneous use of antitoxin in the same manner as if the diphtheria existed alone.—EARLE.]

Magnesia sulphite (sulphurous magnesia) does not possess laxative properties, therefore, to avoid its confusion with sulphate of magnesia (sulphuric magnesia or magnesia sulphurica), one should not use abbreviations in prescribing the same; sulphurous acid is added in order to dilute magnesia and to increase the antiseptic power of the mixture.

In the case of affection of the nose and ears, syringing of the same with a three per cent. solution of boric acid.

In inflammation of the cervical lymphatic glands to produce their resolution—inunction of blue mercurial ointment (ung. hydrarg. cinerei), and with the appearance of symptoms of beginning suppuration—cataplasms of linseed; in the case of fluctuation—incision.

Against the serous synovitis—dry warmth and oil with chloroform to the affected joints; internally—phenacetin in the abovenamed doses three times a day, or sodium salicylate in one-half such doses as the patient is years old, about four times a day.

In the consequent nephritis—see Nephritis.

SMALL-POX. For prophylatic purposes—isolation of the patient from all healthy people, who must be vaccinated at once. The treatment of the disease is a symptomatic one.

To diminish the suppuration xylol is recommended:

(227)

℞

Xyloli,	1.25-4.0 (℈i-℥i).
Aq. fœniculi,	
Syr. menth, pip.,	āā 30.0 (℥i).
Vini malacencis,	60.0 (℥ij).

M

S.—A tea or dessertspoonful every hour or two hours (to children from one year to ten years of age).

Xylol may be prescribed also alone in drops.

(228)

℞

Xyloli puri, 15.0 (℥ss).

S.—As many drops as the patient is years old, in wine, every two or three hours.

This remedy should be given as early as possible, i. e., as soon as the diagnosis of eruption is determined.

To prevent pock marks, cold compresses to the face, or the application of blue ointment (ung. hydrarg. griseæ) on a cloth or

(229)

℞

Acid. carbol., 3.0 (℈ij-gr. viij).
Ol. provinciale, 40.0 (℥i-℥ijss).
Cret. optim. trit. alb., 60.0 (℥ij).

M. ft. pasta.

S.—Apply on a cloth to the face.

[The treatment in the period of eruption (pustules) must be directed to the prevention of the formation of scars. The best method is to keep the skin clean by means of antiseptic solutions or salves: vaselin with boric acid, iodoform, salol, tannin, glycerin with salicylates and, according to Talamon, the best results are obtained from atomizations three or four times a day with corrosive sublimate solution.

(230)

℞

Corrosive sublimate,
Acid. citricum, āā 1.0 (gr. xvi).
Alcohol (90°), 5 c. c.
Æther q. s. ad solutionem up to 50.0 (℥i-℥iiss).

M

The spraying lasts one or two minutes until the surface of the skin and vesicles become pale under the sheath of deposited corrosive sublimate (Comby). "This method," says Comby, "in combination with antiseptic baths, gives the best results not only regarding the spread and formation of the subsequent scars, but also regarding the general mortality (Talomon), yet in grave cases, in confluent and hæmorrhagic forms, this method proves negative."

The other method is that of Finsen (Copenhagen), to which he called attention in 1893. This consists in the treatment in a *red room,* because Finsen found that only chemical rays of the sun-spectra irritate the skin, therefore he advises to place patients with small-pox in a room with windows provided with red glass. Comby applied this plan and obtained good results: the pustules became dry very soon and even very often suppuration did not take place at all. As this procedure cannot always be made applicable, Comby advises the application to the affected skin of gauze wet in a weak solution of corrosive sublimate (1:4000); such applications to be changed twice a day. For the nervous complications baths should be employed, warm or, if the patient bears them well, cold (58° F.). When bathing cannot be used, one should resort to packs in wet blankets, sponging, etc. (See the treatment of typhoid fever).

In the period of recovery the desquamation of the epidermis may be accelerated by *soap and water baths,* sprayings with boric acid solutions of the hairy parts of the head and face.

Besides the care of the skin to prevent the severity of suppuration and various complications, one should give heed to the general condition of the patient—as to delirium, fever, etc.—EARLE.]

SUMMER COMPLAINT. The most rigorous diet; milk should not be given at all, even the breast should not be allowed for a few hours and only drink should be given in teaspoonfuls of, for instance, cold-tea, water with albumen (the albumen of one egg is shaken in one glass of water, filtered and then to the solution a teaspoonful of brandy or a piece of sugar is added. This may be cooled by placing upon ice, and then a teaspoonful every five or ten minutes, depending on the thirst).

Remedies of value are antiseptics and stimulants. Most often calomel is employed in small doses and also quinine:

(231)

℞

Hydrarg. chlor. mit.,	0.06 (gr. i).
Sacchar,	4.0 (℥i).

M. ft. pulv. No. 12.

S.—One powder every two hours during twenty-four or forty-eight hours until the appearance of colored (green) dejecta.

(232)
℞
Quin. sulph., 0.36 (gr. vi).
Div. in No. 12.
S.—A powder every two hours (to a child aged six or eight months).

In the period of collapse—stimulants; brandy may be given in approximately as many drops, pro dosi, as the child is weeks old, about six to ten times a day, if needed. Demme advises brandy with creosote in cholera infantum:

(233)
℞
Spts. vini gal. cognac., 2.5-8 (℥ij-℥ij).
Creosoti, 0.01-0.015 (gr. 1-6-gr. ¼).
Pulv. gummosi, 1.25 (℥i).
Aq. dest., 60.0 (℥ij).
M
S.—To be taken during twenty-four hours (by a child three to six months old).

(234)
℞
Liq. ammon. anis., 2.0 (℥ss).
Aq. dest., 10.0 (℥ijss).
Syr. simp., 10.0 (℥ijss).
M
S.—A teaspoonful every hour (to a child one to four months old).

(235)
℞
Liq. ammon. anis.,
Æth. sulph., āā 8.0 (℥ij).
M
S.—Two drops, pro dosi, every thirty minutes.

Either of these remedies may be given pro dosi as many drops as the patient is years old.

(236)
℞
Camph. tritæ,
Flores benzoës, āā 0.12 (gr. ij).
Sacchar., 1.25 (℈i).
M. ft. pulv. No. 8.
S.—One powder every two hours (to a child six to twelve months old).

(237)
℞
Moschi oriental., 0.06-0.12 (gr. i-ij).
Sacchar., 2.0 (℥ss).
M. ft. pulv. No. 8.
S.—One powder every hour or two hours (to a child six or twelve months old).

(238)
℞
Tr. moschi, 15.0 (℥ss).
S.—Six to ten drops every two hours (to a child six to twelve months of age).

In fifty drops of the tincture one grain of musk is contained. A one-year-old child receives five to ten drops pro dosi and then to each year five drops are added, every one or two hours, for instance, a five-year-old child is given thirty drops or half-a-grain of the powder; an eight-year-old child forty-six drops or one grain pro dosi.

Spasmus Glottidis. See Laryngismus Stridulus.

Spina Bifida. To preserve the tumor from traumatic lesions it is covered with a half-spheric mantle of hard rubber. The radical treatment consists in the opening of the sack and closure of the opening in the vertebral column by means of an osteoplastic operation.

Spondylitis. The general antiscrofulous treatment. A jacket of plaster of Paris. In the case of violent pains in the spine and fever—to remain in bed.

Stomacace. See Diseases of the Mouth.

Stomatitis. See Diseases of the Mouth.

ST. VITUS' DANCE. See Chorea Minor.

SYPHILIS. See Hereditary Syphilis.

[*Stomatitis syphilitica.* Stomatitis syphilitica needs a preventive treatment, the best being potassium chlorate (two per cent. solution), or one per cent. solution of sodium chloride with iodine (see prescription No. 21). Hydrogen dioxid diluted three times with water has been lately recommended (Fridenberg).—EARLE.]

TETANIA. The treatment of anæmia, diarrhœa, rachitis—the causes. Of the symptomatic treatment of prime value is chloral, then bromides.

(239)

℞

Chloral. hydrat.,	1.25 (℈i).
Aq. dest.,	90.0 (℥iij).
Syr. simp.,	10.0 (℥ijss).

M.

S.—A tea or dessertspoonful every two hours (to a child one to two years of age).

(240)

℞

Chlorali hydrat.,	1.25 (℈i).
Aq. dest.,	90.0 (℥iij).
Kali. brom.,	4.0 (℥i).
Syr. simp.,	10.0 (℥ijss).

M

S.—A tea or dessertspoonful every two hours.

TYPHOID FEVER. As the fever is of benign character, this disease does not need any treatment at all, except a certain diet. Hard food must be forbidden up to the complete disappearance of fever. In the case of more or less severe nervous symptoms the antifebrile method of treatment may be adopted. The therapy of the diarrhœa is accomplished by opium, bismuth, etc.; of the cough by the usual treatment of a bronchial catarrh. For the abortive treatment of typhoid calomel in large doses is to be recommended, as a laxative, for instance, gr. i. for a dose every hour if needed.

[With minuteness the treatment of *typhoid fever* is discussed

by Prof. Filatov in his lectures on Acute Infectious Diseases in Children. A brief description of his method of treatment of this disease is here taken (as an abstract) from the above-named book:]

The question of prophylaxis is quite important regarding permission to the mother to nurse her baby. Although the baby is not in danger of contracting typhoid fever through the mother's milk, nevertheless, the considerable exhaustion of the mother caused by the protracted fever may increase under the influence of nursing, so that it is more advisable to forbid the mother nursing. Besides this the quantity of milk decreases and the quality changes so that the child must be given additional food, and artificial feeding should again be recommended.

The treatment of the disease in private practice consists in placing the patient in a large, clean, light room; the temperature of the room should not be higher than 61°-63° F.

For purposes of cleanliness one should always advise sponging of the body with slightly warm water; the sponging also lowers, although not very considerably, the temperature of the body. The temperature of the water should be agreeable to the patient, from 68° F. up to 77°-81.5° F. The sponging is accomplished by means of a wet sponge which is first passed over the anterior surface of the body, including the face, and then the posterior surface. Superfluous water is removed from the skin by means of a dry towel, which should be gently applied. The sponging is employed about three times a day, or every two hours. Some advise the addition of aromatic vinegar to the water (one or two tablespoonfuls to a glass of water) and ascribe to this mixture a good influence not only upon the general condition of the patient, but also on the temperature.

Regarding the diet, one should allow drink to the patient and the drier his tongue is, the oftener he may take fluid (milk, water, lemonade, but each time in small quantities, a dessertspoonful every twenty to thirty minutes). The food must be fluid (broth, milk, half a cup every three hours). Meat and bread should not be given until the end of fever.

The drug treatment of typhoid. In beginning cases of typhoid, not later than the seventh day, and if there is no diarrhœa, we give calomel; to children of five or seven years of

age three grains every three hours until the bowels move freely, but no more than three powders; to children seven to twelve years of age, four or five grains, also three powders if needed. To avoid inflammation of the gums, along with the calomel and four days after its use, the patient cleanses his mouth with the two per cent. solution of potassic chlorate; and if the child cannot yet gargle, then in the case of affection of the mouth, potassium chlorate is given internally, for instance, a tea or dessertspoonful of the following solution:

(241)

℞

Potassii chlorati,	℈i (1.25).
Aq. destil.,	℥iii (90.0).
Syr. simp.,	℥iii (12.0).

M

S.—To a child three to six years of age.

The treatment of typhoid fever is purely symptomatic. The fever does not require any treatment, and the per cent. of mortality in our clinic (Moscow) is not larger than that in German clinics where antipyretic treatment (quinine, baths) is very common. We have tried antipyretic medicines—(1) sodium salicylate, (2) quinine and (3) antipyrine. From the first remedy we had only bad complications, as ringing in the ears, burning and dryness in the throat, vomiting after the first doses, erythema (of the hands and feet), subcutaneous œdema of the face, hands and feet (Steffen) etc., and what is most important and dangerous—*collapse,* so that sodium salicylate is not good for the treatment of typhoid fever.

Quinine we give in doses of twice the number of grains the patient is years old (for instance, a child five years of age is given ten grains) in one or two doses at night, and if the temperature does not fall, by the next morning, lower than 38.5° C. (101.3° F.), then after twenty-four hours one may give 1½ grains more. The fall of temperature lasts, depending upon the period of the disease and persistency of the fever, from a few hours up to thirty-six hours.

Antipyrine should be given in half grain doses for each year, for instance, to a child six years old gr. iii.

(242)

℞

Antipyrin gr. xviii.

M. ft. pulv. No. 6.

S.—One powder every hour.

Antipyrine lowers the temperature for a few hours, but does not shorten the course of the disease. It acts badly on the heart, therefore we hold as an absolute contraindication to any antipyretic treatment (including even water treatment) a weak heart-activity, manifested by the weakness of the second pulmonic sound, murmur at the apex beat, a hardly visible apex beat, frequent, feeble pulse, etc.

Regarding *baths* we recommend them only in the presence of some nervous complications. The fever may be high, but in the absence of nervous symptoms (the patient's consciousness is clear, he is not very prostrated, etc.), then the baths are superfluous. But, if high temperature be connected with dry tongue, somnolency, delirium, etc., then is the bath of value. Weakness of the heart, hypostasis in the lungs, aversion of the patient to bathing, are contraindications to the baths.

The temperature of the bath should be 95° F. and the child kept there about ten to fifteen minutes; the bath is gradually cooled by adding cold water until the temperature falls down to 86° F. In cases of mild severity the bath is given once or twice during twenty-four hours; in grave ones—not more than four times. When it is impossible, for any reason, to employ a bath, then packs are applied. For this purpose a sheet (blanket) is used saturated with water of the temperature of the room, or still colder water is taken; the sheet is put across the bed and the patient placed so that the upper edge of the sheet is under the axillæ; the patient is wrapped in the sheet and briskly rubbed until he becomes warm. After ten minutes the patient is wrapped in another sheet. This procedure being repeated three or four times.

To combat the diarrhœa we administer opium, of which four drops a day (of the tincture) to a five or six-year-old child; to older children the dose is accordingly increased; besides opium, bismuth (two grains, four times a day) and tannin (two to three

grains a day for the same age—four-year-old child).

Against meteorism we use valerian infusion:

(243)

℞

Inf. rad. valer.,	gr. x:℥ii.
Tr. opii,	m. m. vi.
Syr. simp.,	℥ii.

M

S.—A teaspoonful every two hours; and after eight years —a dessertspoonful.

If the meteorism be accompanied by constipation, then valerian infusion is given without opium, and cool enemata administered.

In grave cases of typhoid there is usually *bronchitis* present, with numerous moist râles. In such cases expectorants should be administered, usually together with some anodyne, as most often in such cases we have to deal with weakened heart-activity:

(244)

℞

Inf. rad. pol. senegæ e,	℥i ad. ℥ii.
Liquor. ammon. anis.,	m. m. xv.
Syr. ipecac,	℥ii.

M

S.—A teaspoonful every two hours.

This treatment may be accompanied by mustard-plasters applied to the chest, and cupping-glasses in case there are hypostases in the lungs.

Of *nervous symptoms* we must treat headache, excitement and soporous condition. Against headache we use only cold compresses to the head, and against delirium and somnolency—wine and slightly warm baths (in case the pulse is good), and only wine (a tea or dessertspoonful every hour—port or madeira) or other anodynes (valeriana, moschus in ¼-½ grain doses every two hours). In the case of a deep sopor we resort to cold drenching of the head.

Bed sores are treated by placing under the affected part an air-pillow and applying an ointment—ung. plumbo-tannicum.

In *peritonitis*—ice to the abdomen and subcutaneous injec-

tions of morphium near the region of the severest pain, or opium internally until complete narcosis occurs, but any treatment is here hopeless.

[Typhus fever is very contagious, therefore the patient must first of all be isolated and his room should be most carefully ventilated. Regarding the treatment of this form of fever we must refer to what has been said on account of the treatment of typhoid fever, from Filatov's Lectures on Acute Infectious Diseases in Children, Vol. I.]

Typhilitis. See Peritonitis.

Torticollis. In rheumatic forms of torticollis—warmth to the neck and massage of the affected muscles. In the case of severe painfulness of the vertebræ in the area of the lateral articulations (synovitis vertebralis) painting of the affected part with iodine or the use of a fly blister.

Tussis Convulsiva. See Whooping cough.

Umbilical Hernia. See Hernia Umbilicalis.

Uræmia. See Nephritis.

Urticaria. Attention should be given to the condition of the gastro-intestinal tract. If chronic urticaria be accompanied by constipation, then cod-liver oil is the best. In case of periodical relapses of the rash—quinine. If the cause of the disease cannot be determined, then we may empirically give either bromides, or alkaline waters, or antipyrin.

[The local treatment of urticaria according to *Gaucher* and *Barbe* consists in washing the affected parts with hot water mixed with one-third of vinegar, or with a one per cent. solution of carbolic acid; baths are contraindicated. The rash is covered with starch-powder, talc, to which some camphor or menthol may be added. If the local treatment proves insufficient, the severe itching may be relieved by means of valerian preparations. In *chronic* forms of urticaria quinine (sulphate) is of benefit, but exclusively in forms of malarial origin.

Here are some prescription formulæ recommended in urticaria by different authors:

(245)

℞

Aq. amygdal. amar.,	5.0 (℈iv).
Chlorali hydrati,	0.5 (gr. viii).
Cocaini muriatici,	1.0 (gr. xvi).
Aq. dest.,	ad. 50.0 (℥i-℥iiss).

M

S.—To rub upon the itching parts.

Or

(246)

℞

Mentholi,	5.0 (℈iv).
Chloroformii,	
Ætheris,	
Spiritus,	āā 15.0 (℥ss).

M

S.—Apply externally.

Or

(247)

℞

Chlorali hydrati,	
Camphoræ,	āā 4.0 (℥i).
Pulv. Amyli.,	30.0-60.0 (℥i-℥ii).

M.

S.—Rub in the affected surface.

—Earle.]

Varicella does not require any active treatment. To diminish the itching the whole body is rubbed with olive-oil.

Variola. See Small-pox.

Vulvitis. See Painful Micturition.

Vomiting. Eructation in nurslings does not call for, of course, any other treatment than diminution of the quantity of food. Vomiting in the beginning of acute febrile diseases soon stops of itself. Persistent vomiting due to stomach catarrh, cerebral diseases, etc., is best relieved by swallowing pieces of ice, or, in children who cannot swallow the same, then by small doses of ice-water (a teaspoonful every five to ten minutes) and an absolutely recumbent posture. Externally—mustard plasters to

the region of the stomach; and internally—bismuth, oxalate of cerium, effervescent powders:

(248)
℞
Cerii oxalici, 0.18-0.3 (gr. iij-v).
Magist. bismuthi, 0.72 (gr. xij).
M. ft. pulv. No. 6.
S.—One powder every two hours (to a child aged four to eight years).

Cerium may be given in approximately 0.03 (gr. ½) doses pro dosi to each year; this remedy is not a strong one.

Against bloody vomiting, and bloody dejections also, absolute rest; ice, internally and externally; warmth to the feet. Internally—sesquichloride of iron, ergotine, plumbum (lead).

(249)
℞
Liq. ferri sesquichlor.,
Glycerini, āā 8.0 (℥ij).
M.
S.—One to five drops every two hours (to children of one to ten years of age).

(250)
℞
Inf. secal. cornut., ex. 2.0:90.0 (℥ss-℥iij).
Syr. simp., 10.0 (℥ijss).
M.
S.—A tea or dessertspoonful every two hours (to children four to eight years old).

Secale cornutum may be given in powders or an infusion up to 0.12-0.2 (gr. ij-gr. iijss) pro die to each year, but not longer than a few days.

(251)
℞
Plumbi acetat., 0.12 (gr. ii).
Sacchar., 1.5 (℈i).
M. ft. pulv. No. 8.
S.—One powder every three hours (to a child two to eight years of age).

For adults the highest dose of acetate of lead is 0.05 (gr. i) pro dosi, and 0.25 (gr. iv) in twenty-four hours; thus, according to calculation, a child aged two to four years should be given only 0.008 (gr. 1/8) pro dosi and 0.03 (gr. 1/2) pro die, but in practice this remedy is usually given in larger amounts.

Warts. Cauterization with potassium causticum fusum or fumans nitric acid.

Werlhof's Disease. See Purpura.

Whites. See Painful Micturition.

Whooping-cough. Pertussis or Tussis Convulsiva. In some cases an abortive action on the whooping-cough is exhibited by a change of air, even by the removal of the patient a few miles from the place of the epidemic, but this does not always help.

To go out of doors in the summer time is allowable, and even should be encouraged; but in the winter only older children should leave the house, and only then provided the weather is moderate and the patient is not perspiring. The room of the patient must be ventilated twice a day, in the morning and in the evening. During sleep a cloth wet in three per cent. solution of carbolic acid, may be suspended by the head of the bed.

(252)
℞

Acid. carbol. cryst.,	3.0 (gr. xlviij).
Aq. dest.,	100.0 (℥iij-℥ijss).

M.

S.—For disinfection of the air.

Internally bromides are most often prescribed, also quinine, chloral hydrate, antipyrin. After a few days using of one remedy another is usually resorted to and then one returns to that which proved the best.

Quinine is given twice a day in as many grains as the patient is years old, during four or five days.

(253)
℞

Chinini mur.,	0.25 (gr. iv).

S.—One such powder in the morning and evening (to a four-year-old child).

Bromides are administered in gradually increasing doses from 0.1 up to 0.3 (gr. iss-gr. v) to each year pro die in four doses (thus from 0.03 to 0.1 (gr. ss-gr. iss) to a year, pro dosi), for instance:

(254)
℞
Ammon. brom., 4.0 (℥i).
Aq. dest., 90.0 (℥iij).
M.
S.—A dessertspoonful four times a day (to a child ten years of age; after a few days the dose is increased up to a tablespoonful four times a day).

If several bromide preparations are prescribed in one mixture, then their total dose must not exceed the one mentioned, i. e.

(255)
℞
Ammon. brom.,
Potassi brom., āā 2.0 (℥ss).
Aq. dest., 90.0 (℥iij).
M.
S.—Like the preceding.

For the removal of the taste it is best to be given in a glass of water.

[Bromoform, in doses of one drop for each year of age, may be given in the form of an emulsion, or otherwise well-diluted, four times daily. It is important that the bottle containing the mixture be well shaken before each dose is poured out, and it is better not to use the last two or three remaining doses.

In using this remedy no appreciable effect will be noted for the first three or four days, but after that the frequency and severity of the paroxysms will be diminished and the attack aborted.—Earle.]

Chloral hydrate is used either as a sedative or as a hypnotic.

In the former case it is given 0.05-0.10 (gr. i-gr. ij) pro

dosi to a year or 0.3 (gr. v) to a year pro die, and as a hypnotic—the day dose is given at once. (The highest dose for an adult is 6.0 (ʒiss).

(256)
℞

Chloral. hydrat. cryst.,	4.0 (ʒi).
Aq. dest.,	90.0 (ʒiij).
Syr. simp.,	10.0 (ʒijss).

M.

S.—Four times a day a dessertspoonful (to a child four to five years old).

If in whooping-cough croton-chloral-hydrate seems to act better, its dose must be one-fourth less than the preceding, i. e., it is given in from 0.008-0.015 (gr. ⅛-gr. ¼) to a year pro dosi and to 0.05-0.10 (gr. i-gr. ij) to a year pro die. As it is slightly soluble in water, but readily in alcohol and glycerin, therefore, it is prescribed together with the latter:

(257)
℞

Croton chlor. hydrat.,	2.0 (ʒss).
Glycerini,	
Aq. dest.,	āā 45.0 (ʒiss).
Tr. cardamon. compos.	15.0 (ʒss).

M.

S.—A tea or dessertspoonful four times a day (to children four to eight years of age).

Or

(258)
℞

Croton chlor. hydrat,.	2.0 (ʒss).
Glycerini,	15.0 (ʒss).
Aq. dest.,	75.0 (ʒijss).
Syr. aurant.,	15.0 (ʒss).

M.

S.—Like the preceding.

Antipyrin is recommended in whooping-cough in as many

decigram doses (a grain-and-a-half), as the patient is months old (to children during the first year of life) for instance:

(259)
℞
Antipyrini, (or)
Phenocol. muriat., 4.0 (ʒi).
M. ft. pulv. No. 12.
S.—Three powders a day (to a child ten years of age).

In many cases phenocolum muriaticum is of use in whooping-cough, in the same doses as antipyrin. In whooping-cough steam inhalations are sometimes of value with a one or two per cent. solution of sodium salicylate and bromide:

(260)
℞
Sodii salicyl.,
Sodii brom., āā 2.0 (ʒss).
Aq. dest., 180.0 (℥vi).
M.
S.—To inhale three times a day in a tablespoonful dose.

In very grave cases of whooping-cough one should try painting the throat with a four per cent. solution of cocaine three times a day, and morphin internally (see Laryngitis or Catarrh of the Larynx).

[Trousseau recommended *belladonna* in the treatment of whooping-cough. Tincture of belladonna may be given, according to Hallopeter (Philadelphia), in as many drops for a dose as the patient is years old, gradually increasing the quantity in small children; a belladonna plaster may be applied to the interscapular region. Belladonna may be given together with aconite:

(261)
℞
Tr. belladonnæ,
Tr. aconiti rad., āā 8.0 (ʒii).
M.
S.—Ten drops three times a day, increasing the dose if need be (to a child five years old).—*Comby.*

Or

(262)

℞

Tincturæ belladonnæ,
Tincturæ droser.,
Tincturæ grindel. robust.,
Tincturæ lobel. inflat., āā 8.0 (℥ii).

M.

S.—Fifteen to twenty drops every three or four hours (to a child four to five years old).

As soon as the pupils become dilated, the medicine should be stopped.

Syrupus belladonnæ contains 0.75 of the tincture to ten grams of syrup, being given in teaspoonful doses two to six times a day. Usually belladonna may be given, according to Comby, in large doses—five to six drops of the tincture to a two-year-old child, gradually increasing the dose up to twenty, thirty, or forty drops a day.

Syrup of belladonna may be associated with syrup of tolu:

(263)

℞

Syrup bellad., 20.0 (℥v).
Syrupt tolu, 60.0 (℥ii).

M.

S.—A teaspoonful twice a day (to small children), increasing the dose by half a teaspoonful until the desired action occurs.

Belladonna may be also prescribed with heart-tonics:

(264)

℞

Syrupi belladonnæ, 60.0 (℥ii).
Syrupi valerianæ,
Syr. digitalis, āā 30. (℥i).

M.

S.—One to six teaspoonfuls a day (H. Roger).

—Earle.

Worms of the Intestinal Tract. *Ascaris lumbricoides*:

(265)
℞

Santonni,	0.6 (gr. x).
Sacchar.,	2.0 (ʒss).

M. ft. pulv. No. 10.

S.—One powder three times a day (to a child aged five to eight years). After the last powder a laxative.

Santonin belongs to the stronger remedies and according to the R. P. the highest dose is equal to that of opium, i. e., an adult is allowed to take three grains, pro dosi, (0.2) and only six grains, pro die (0.4) [the same is true of the U. S. P.]; according to calculation, a child two to three years of age could be given only one-quarter of a grain (gr. ¼-0.015) pro dosi, and one grain pro die (0.06), but observations show that these limits may be passed, and without harm children two years of age may be given two grains pro die, and then to each year a half-a-grain should be added, for instance, a six-year-old child—four grains (0.25); eight years old—five grains (0.3), etc.

The cheaper, but more repugnant although not weaker in its action, *semen cinæ* is given to children in from two to ten grains, pro dosi, three or four times a day.

The symptoms of poisoning from santonin are manifested by vomiting, dizziness, general debility and finally convulsions. In mild cases the poisoning is shown by chromatopsia and highly-colored urine, which sometimes causes a sense of soreness during micturition.

Oxyuris Vermicularis. Yields most readily to enemas to which small quantities of sublimate are added; the enemas must be cool and abundant in order that they should not be kept very long in the bowels; for instance, to a child from two up to three years of age one glass, or one-and-a-half, is administered, for older ones about three glasses. In the dosage of the corrosive sublimate one should bear in mind that the total amount of sublimate introduced in the rectum should not exceed 0.015 (gr. ¼).

(266)

℞

Hydrarg. chlor. corrosiv., 0.06 (gr. i).
Aq. dest., 180.0 (℥vi).

M.

S.—A tablespoonful to a glass of water for an enema (thus for three glasses three tablespoonfuls, which will make 0.015 (gr. ¼).

For rectal injections there is also employed decoction of garlic in milk (half of the bulb to a glass) or an infusion of wormwood, etc.

In the beginning the enemas are applied in the morning and in the evening, and when the evening itching does not bother the patient any more (this occurs after about three days) then they are made only in the evening for an additional ten days.

Symptomatically against itching *in ano* one may apply to the anal region pure turpentine or blue ointment:

(267)

℞

Ung. hydrarg. grisei, 30.0 (℥i).

S.—Apply externally.

Internally there is recommended naphthalinum purissinum:

(268)

℞

Naphthalini pur., 0.1-0.3 (gr. iss-v).

S.—Such a powder three times a day.

Tænia Solium, Tænia mediocanellata and Bothriocephalus latus require the same treatment. The best remedies are the fresh preparations of male fern (felix mas) and of the cortex radicis granati.

The secret of the therapy of tape-worms consists in administering as large doses as possible of the above-named remedies. Because of the bad taste of these drugs it is best to prescribe them in pills, provided the child can swallow them:

(269)

℞

Ext. felicis maris ætht.,
Pulv. felicis maris, āā 4.0 (℥i).

M. ft. pil. No. 40.

S.—To be taken in the morning on the empty stomach during one or one-and-a-half hours (to a six-year-old child).

Generally one may prescribe 0.6 (gr. x) of the extract to each year, for instance, to a ten-year-old child 6.0 (℥iss):

(270)

℞

Ext. felicis maris æth.,
Ext. cort. rad. pun. granati,
(recente præp.), āā 4.0 (℥i).
Pulv. punici granati q. s.

M. ft. pil. No. 40.

S.—To take them in the morning in four doses (to a child aged six to eight years).

If there is no fresh extract to be obtained then infusion is better:

(271)

℞

Cort. rad. granati, 30.0-60.0 (℥i-ij).
Infunde in aq. frigid, 300.0 (℥x).
Macera per duodecim horas, dein coque
usque ad colaturam, 250.0 (℥viij).
Adde syr. simp., 30.0 (℥i).

M.

S.—To take in the morning in four doses during one or one-and-a-half hours.

To small children male fern is prescribed with kamala in the form of an electuary, for instance, to a three-year-old child:

(272)

℞

Pulv. kamalæ,
Ext. felicis maris æth., āā 2.0 (ʒss).
Syr. simp. et pulv. gum. q. s.
ft. electurium.

S.—To be taken in the morning in three doses during one hour.

Kusso also acts well, the powder of which is prescribed, for instance, in 1.0-2.0 (gr. xvi-ʒss) doses to a year, for instance:

(273)

℞

Pulv. flor. kusso, 8.0 (ʒij).
Mel. desprumati q. s. ft. electuarium.

S.—To take in two or three doses during one hour (to a child six to eight years of age).

A day before the treatment with any remedy it is useful to limit the diet: besides soup and meat the child is given onion and salt baths, and to drink an emulsion of pumpkin-seeds, which of itself may occasionally expel the tape-worm. In the morning of the day of the treatment, a cup of coffee is given to the patient, then this or that remedy, and two hours after the last dose a laxative. If the tape-worm has appeared, but is not fully expelled, then an enema of warm water is used (two or three glasses).

Wry-neck. See Torticollis.

DOSAGE OF DRUGS ACCORDING TO AGE OF PATIENT.

The following table of the *Dosage of Drugs in Childhood* is made according to a certain rule recommended by Hufeland, that the dose decreases according to the age in the following manner:—

If the dose for an adult (beginning with *twenty-four* years) is equal to one (= 1), then for children

12 to 15 years of age = ½ the adult quantity.
9 to 12 years of age = 1-3 the adult quantity.
6 to 9 years of age = ¼ the adult quantity.
4 to 6 years of age = 1-6 the adult quantity.
2 to 4 years of age = ⅛ the adult quantity.
1 to 2 years of age = 1-10 the adult quantity.
under 1 year of age = 1-20 the adult quantity.

It is not difficult to keep this table in memory, if it will be remembered that the dose decreases in direct proportion to the age; namely:—

An adult person (twenty-four years)	1
Twelve-year-old	½
Six-year-old	¼
Three-years-old	⅛

If the doses of the following table be compared with the doses given in the text of the "THERAPEUTIC INDEX," it will be found that there is no complete harmony; this may be partly explained by the fact that physicians at the bed-side of the patient do not adhere rigidly to the routine rule and some remedies are used by them in larger doses than is prescribed by the pharmacopœa (as an example we point to santonine and turpentine), while with other remedies, for instance, narcotics, the physician is more cautious, using less than is indicated by the pharma-

copœa, and seldom resorting to the highest dose. The other cause of the discrepancy between the table and the text depends upon the fact that we have aimed to make it easier for beginners to remember the doses and thus we to some extent have systematised the doses in the text.

All strong remedies are indicated in the table by an asterisk*, while very poisonous substances, in prescribing which one should never in childhood begin with the highest dose allowed by the pharmacopœa, are indicated by a dagger (†). In all remedies indicated by an asterisk the highest permitted dose is given; and in others—the common, average dose which may be somewhat increased or decreased without harm to the patient.

All numbers of the table indicate grains or parts of a grain, excluding those few cases in which the prescription signs are given otherwise.

This table of drugs is far from complete, as we have included only those most commonly used.

NAME OF DRUGS.	UNDER 1 YEAR.		FROM 1 TO 2 YEARS.		FROM 2 TO 4 YEARS.	
	Pro dosi.	In 24 hours.	Pro dosi.	In 24 hours.	Pro dosi.	In 24 hours.
Acidum arsenicosum*†	1–240	1–120	1–120	1–60	1–100	1–50
Ac. benzoicum (Flores benzoes)	1–6	1	¼ to 1–3	2	½	3
Acidum boricum	½	3	1	6	2	12
Ac. muriat. dilutum	½	3	1	6	2	12
Ac. nitricum dilutum	½	3	1	6	2	12
Acid. tannicum (Tanninum)	1–5	1	2–5	2	½	3
Ammonium bromatum*	1½	6	3	12	4	15
Ammonium carbonicum	¼	1	½	2	1	5
Ammon. chlorat. depur.	½	3	1	6	1 to 2	12
Amygdalin* (Emulsion amygdal).	1–60	1–20	1–30	1–10	1–24	⅛
Antifebrinum†	½	1½ to 2	1	3 to 4	1 to 2	4 to 5
Antipyrinum†	1	3 to 4	2	6	2 to 4	6 to 10
Apomorph. muriat. crystal.	1–120	1–20	1–60	1–10	1–48	⅛
Aq. amygdal. amar.*	m.1	m.m.6	2	12	2½	15
Aq. calcis.	℈ss–℥i	℥ss–℥i	℈i–℥ii	℥i–℥iss	℥ss–iv	℥i–℥ii
Argent. nitric. crystalis.* (Half–one grain to ℥ii of water, tea–dessertspoonful doses)	1–40	⅛	1–20	¼	1–16	⅜
[1]Atropinum sulphuric*†					1–480	1–160
Bismuthum subnitr. (Magister. Bism.)	½ to 1	3 to 4	1 to 2	4 to 8	2 to 2½	6 to 10
Bismuthum salicylicum	½	3	1	4	1½	6
Butili chloralum hydrat.† (Crotonchloral–hydratum).	4–5	3	1½	6	2	7½
Calcaria hypophosphite (hypophosphas calcis)	¼	1	½	2	¾	3
[2]Calomel as an antiphlogistic from 1-20 gr. up to 1–6						
Calomel as a laxative	1–3	2	½	3	½ to 1	2 to 4
Camphora*	1–12 to ¼	½ to 1	1–6 to ½	2	¼ to ¾	2½
Camphora bromata	1–12 to ¼	½ to 1	1–6 to ½	2	¼ to ¾	2½
Cerium oxalicum†	1–12 to ¼	½ to 1	1–6 to ½	2	¼ to ¾	2½
[3]Chininum (quinine); its salts.						
Chloralum hydratum crystal.*	1 to 4	6 to 12	1 to 8	12 to 24	2 to 10	12 to 30
Cinæ flores.	4	12	4 to 8	24	4 to 10	15 to 30
Cocainum muriaticum.*	1–16 to ⅛	½	⅛ to ¼	1–6 to 1–3	1–6 to 1–3	I
Codeinum*†	1–20	3–20	1–10	3–10	⅛	⅜
Coffeinum* and its salts.	3–40	2–5	3–20	4–5	3–16	1
Cremor tartari	2	6	2 to 4	6 to 12	4 to 6	12 to 20

(For figure references see page 814.)

NAME OF DRUGS.	UNDER 1 YEAR.		FROM 1 TO 2 YEARS..		FROM 2 TO 4 YEARS.	
	Pro dosi.	In 24 hours.	Pro dosi.	In 24 hours.	Pro dosi.	In 24 hours.
[4]Cuprum sulphuricum* (as an emeticum)...	½	3	½	3		
Extr. belladonnæ†	1-60 to 1-20	1-3	1-40 to 1-10	2-5	1-16 to ⅛	½
Extr. cort. rad. Granati.†	3	9	6	18	7 to 15	20 to 40
Extr. filicis maris æther.	3	9	6	18	7 to 15	20 to 40
Extr. fluid cort. cascara sagrada†	m.m.1 to 3	4 to 8	2 to 6	8 to 16	4 to 8	12 to 20
Extr. fluid cort. hydrastis canad.†	2	8	4	16	5	20
Extr. hyoscyami*	1-30 to 1-10	½	1-20 to 1-5	1	⅛ to ¼	1
[5]Extr. opii*†						
Extr. secalis cornuti* (Ergotinum Bonjeani) (Internally or subcutaneously).	⅛ to ¼	¾	¼ to ½	1½	1-3 to 2-3	2
Extractum strychni aquosi*†	1-16 to ⅛	½	1-16 to ¼	1	⅛ to ⅜	1
[6]Extractum strychni spirit						
Ferrum carbonicum sacchar.	¼	1	½	2	½ to 1	2 to 4
Ferrum lacticum.	¼	1	½	2	½ to 1	2 to 4
Ferrum pyrophosph. cum natro.	¼	1	½	2	½ to 1	2 to 4
Ferrum pyrophosph. cum ammonio citrico.	¼	1	½	2	½ to 1	2 to 4
Ferrum iodatum sacchar.	¼	¾	½	1	½	1½
Foll. belladonnæ*†	3-20	½	1-3	1	¾	1⅛
Fol. digitalis. *† (In powders).	3-20	½	1-3	1	¾	1⅛
Fol. digitalis, in an infusion.	¼	1	½	2	⅝	2½
Fowler's Solution. (See Liq. ars. Fowleri or potassii arsenici.)						
Hydrarg. bichlor. corrosiv.*	1-40	1-10	1-20	1-10	1-16	⅛
Hydrarg. chlorat. mite.* (See Calomel.) ..						
Infus. sennæ compos. (Vienna water.) ...		5i		5iii	5i	5ss
Kreosotum*	1-20	¼	1-10	½	⅛	½
Kusso	7	15	15	30	20	40
Liq. ammon. anisat.	m.m.¾	3	1½	6	2	8
[7]Liq. arsenic. Fowleri.	m.¼	¾	½	1½	¾	2
[8]Liq. ferri sesquichlorati.						
Liq. potassi arsenic. S. Fowler's Solution. (See Liquor arsenicalis Fowleri.)						
Magnesia carbonica and usta	1	4	2	8	3	9
Mercurial blue ointment. (See Ung. hydr. cinerei.)						
Morphium acet.*† and other salts	1-200 to 1-40	1-20	1-200 to 1-20	1-10	1-16	¼
Musk (Moschus).	¼	1½	¼ to ½	3	¼ to ½	4
Naphthalinum†	4-5	3	1½	6	2	8
Opium*†	1-40 to 1-20	1-10 to 2-10	1-20 to 1-10	1-5 to 2-5	⅛ to ¼	8-4
Phenacetinum† (like antipyrine)						

(For figure references see page 814.)

NAME OF DRUGS.	UNDER 1 YEAR.		FROM 1 TO 2 YEARS.		FROM 2 TO 4 YEARS.	
	Pro dosi.	In 24 hours.	Pro dosi.	In 24 hours.	Pro dosi.	In 24 hours.
Pepsinum rossicum solu.	½	1½	1	3	1¼	4
Phosphorus*†	1–500	1–250	1–250	1–125	1–200	1–100
Plumbum aceticum depur.*	1–20	1–5	1–10	2–5	⅛	½
Podophyllinum*	1–20	1–3	1–10	2–3	⅛	¾
Potassium bromatum*	2 to 4	12	3 to 8	24	4 to 10	30
Potassium iodatum*	1 to 2	6	½ to 3	12	2 to 4	16
Potassium chlorate (poison)	½	3	1	6	2	12
Pulv. Doveri*†	¼ to ½	1 to 2	½ to 1	2 to 4	1 to 2	4 to 8
[9]Radix Ipecac (as an emetic)	1½	3	2	6	3 to 5	
Radix Senega	½	3	1	6	1½	9
Resorcinum*	1½	5	2	10	2 to 4	12
Santoninum.*	1–6	1–3	1–3	2–3	⅜	¾
Secale cornut. pulv.*	½	1½	1	3	1¼	7½
Sodium benzoicum	1	5	2	10	3	20
Sodium bromatum* (like potassium bromatum)						
Sodium iodatum* (like potassium bromatum)						
[10]Sodium salicylate.						
Strychninum*† (its salts), subcutaneously and internally.	1–200	3–200	1–100	3–100	1–80	3–80
Syrupi ferri iodati.	m.m.3	9	6	18	8	24
[11]Tartarus emeticus (as emetic)*	m.m.3–20	3–5	3–10	1 1–5	¼ to 1–3	
Tinctura belladonnæ*	½	1	1	2	1½	2½
[12]Tinctura ferri pomati						
Tinctura opii						
Tinctura opii crocata*†	m.m.½	1½	1	3	1¼	3½
Tinctura ratanhiæ	m.m.1½	3	3	6	4	8
Tinctura rhei aq. and vinosa	3	6	6	12	8	20
Tinctura strychni (nux vomica)*†	¾	2	1½	3	2	6
Turpentine oil	1	4	2	8	2½	10
[13]Turpentine oil (in diphtheria)				6		10
Ung. hydrarg. (mercurialis) cinerei (friction)						
Xylolum	m.m.	5	2	10	2½	12

(For figure references see page 814.)

NAME OF DRUGS.	FROM 4 TO 6 YEARS.		FROM 6 TO 9 YEARS		FROM 9 TO 12 YEARS.	
	Pro dosi.	In 24 hours.	Pro dosi.	In 24 hours.	Pro dosi.	In 24 hours.
Acidum arsenicosum*†	1–72	1–36	1–50	1–25	1–36	1–18
Ac. benzoicum (Flores benzois)	¾	4½	¾ to 1	6	1 to 1½	8
Acidum boricum	3	18	4	24	5	30
Ac. muriat. dilutum.	3	18	4	24	5	30
Ac. nitricum dilutum	3	18	4	24	5	30
Acid. tannicum (Tannimum)	2–3	4	1	6	1½	8
Ammonium bromatum*	5	20	7½	30	10	40
Ammonium carbonicum	½	8	1 to 2	10	1 to 3	15
Ammon. chlorat. depur.	2 to 3	18	2 to 1	24	2 to 5	30
Amygdalin* (Emulsion amygdal).	1–18	1–6	1–12	1–4	1–9	½
Antifebrinum†	2 to 3	6	2 to 4	8 to 12	3 to 5	9 to 12
Antipyrinum†	3 to 5	9 to 12	4 to 8	16	5 to 10	20
Apomorph. muriat. crystal.	1–36	1–6	1–24	¼	1–18	1–3
Aq. amygdal. amar.*	4	24	6	30	10	40
Aq. calcis.	ʒi–ʒvi	ʒii–ʒiii	ʒii–ʒi	ʒi–iv	ʒii–ʒiss	ʒiii–vi
Argent. nitric. crystalis.* (Half–one grain to ʒii of water, tea dessertspoonful doses)	1–16 to 1–12	½	1–16 to ⅛	⅜ to ¾	1–16 to 1–6	1
[1]Atropinum sulphuric*†	1–360	1–120	1–240	1–80	1–180	1–60
Bismuthum subnitr. (Magister. Bism.)	2 to 3½	8 to 12	3 to 5	12 to 15	3 to 7	15 to 20
Bismuthum salicylicum	2	8	3	12	3	15
Butill chloralum hydrat.† (Crotonchloral-hydratum).	2 2-3	10	4	15	5	20
Calcaria hypophosphite (hypophosphas calcis)	1 to 2	4 to 8	1½ to 3	6 to 9	2 to 3	8 to 12
[2]Calomel as an antiphlogistic from 1-20 gr. up to 1–6						
Calomel as a laxative	¾ to 2	3 to 6	1 to 1½	4 to 8	1 to 3	6 to 9
Camphora*	½ to 1	4	½ to 1½	6	1 to 2	8
Camphora bromata	½ to 1	4	½ to 1½	6	1 to 2	8
Cerium oxalicum†	½ to 1	4	½ to 1½	6	1 to 2	8
[3]Chininum (quinine); its salts.	4 to 15	20 to 45	6 to 20	30 to 60	10 to 30	40 to 80
Chloralum hydratum crystal.*	5 to 12	30 to 40	8 to 15	40 to 60	10 to 20	80
Cinæ flores.	¼ to ¾	1½	¼ to ½	2	¾ to 1	3
Cocainum muriaticum.*	1–6	½	¼	¾	1–3	1
Codeinum*†	⅛	1–3	⅜	2	½	4
Coffeinum* and its salts.	5 to 8	15 to 24	6 to 10	20 to 30	6 to 10	20 to 30
Cremor tartari						
[4]Cuprum sulphuricum* (as an emeticum)...	1–12 to 1–6	2–3	⅛ to ¼	1	1–6 to 1–3	1 1–3
Extr. belladonnæ†	10 to 20	30 to 60	15 to 30	45 to 90	20 to 40	60 to 120
Extr. cort. rad. Granati.†	10 to 20	30 to 60	15 to 30	45 to 90	20 to 40	60 to 120
Extr. filicis maris æther.	6 to 10	18 to 30	9 to 15	30 to 40	10 to 15	30 to 45
Extr. fluid cort. cascara sagrada†						

(For figure references see page 814.)

NAME OF DRUGS.	FROM 4 TO 6 YEARS.		FROM 6 TO 9 YEARS.		FROM 9 TO 12 YEARS.	
	Pro dosi.	In 24 hours.	Pro dosi.	In 24 hours.	Pro dosi.	In 24 hours.
Extr. fluid cort. hydrastis canad.†	7	28	10	40	13	56
Extr. hyoscyami*	1–6 to 1–3	1½	¼ to ½	2	1–3 to 2–3	2 2–3
[5]Extr. opii*†						
Extr. secalis cornuti* (Ergotinum Bonjeani) (internally or subcutaneously)	1–3 to ¾	2½	½ to 1	3	¾ to 1½	5
Extractum strychni aquosi*†	1–6 to ½	1½	¼ to ¾	2	½ to 1 2–3	5
[6]Extractum strychni spirit						
Ferrum carbonicum sacchar.	1 to 1½	4 to 6	1 to 2	4 to 8	2 to 3	6 to 9
Ferrum lacticum	1 to 1½	4 to 6	1 to 2	4 to 8	2 to 3	6 to 9
Ferrum pyrophosph. cum natro.	1 to 1½	4 to 6	1 to 2	4 to 8	2 to 3	6 to 9
Ferrum pyrophosph. cum ammonio citrico.	1 to 1½	4 to 6	1 to 2	4 to 8	2 to 3	6 to 9
Ferrum iodatum sacchar.	¾	2½	1	3	1½	4½
Foll. belladonnæ*†	½	1½	¾	2¼	1	3
Fol. digitalis. *† (in powders).	½	1½	¾	2¼	1	3
Fol. digitalis, in an infusion.	5–6	3	1¼	5	1 2–3	6
Fowler's Solution. (See Liq. ars. Fowleri or potassii arsenici.)						
Hydrarg. bichlor. corrosiv.*	1–12	1–6	⅛	¼	1–6	1–3
Hydrarg. chlorat. mite.* (See Calomel.)	3ii	3ii	3ii	3iss	3ss	3ii
Infus. sennæ compos. (Vienna water.)						
Kreosotum*	1–6	1	¼	1½	1–3	2
Kusso	30	3iss	45	3iiss	3i	3iii
Liq. ammon. anisat.	3	12	4	16	6	24
[7]Liq. arsenic. Fowleri.	1	3	1¼	4	2	6
[8]Liq. ferri sesquichlorati.						
Liq. potassi arsenic. S. Fowler's Solution. (See Liquor arsenicalis Fowleri.)						
Magnesia carbonica and usta	4	12	6	18	10	30
Mercurial blue ointment. (See Ung. hydr. cinerei.)						
Morphium acet.*† and other salts	1–12	1–3	⅛	½	1–6	2–3
Musk (Moschus).	¼ to ¾	5	½ to 1	6 to 8	½ to 1½	8 to 10
Naphthalinum†	3	12	4	16	5	20
Opium*†	1–6 to 1–3	1	¼ to ½	1½	1–3 to 2–3	2
Phenacetinum† (like antipyrine)						
Pepsinum rossicum soln.	1½	5	2½	7½	3	10
Phosphorus*†	1–150	1–75	1–100	1–50	1–70	1–35
Plumbum aceticum depur.*	1–6	2–3	¼	1	1–3	1 1–3
Podophyllinum*	1–6	1	¼	1½	1–3	2
Potassium bromatum*	6 to 12	40	8 to 20	3i	10 to 26	3iss

(For figure references see page 814.)

NAME OF DRUGS.	FROM 4 TO 6 YEARS.		FROM 6 TO 9 YEARS.		FROM 9 TO 12 YEARS.	
	Pro dosi.	In 24 hours.	Pro dosi.	In 24 hours.	Pro dosi.	In 24 hours.
Potassium iodatum*	3 to 5	20	4 to 6	30	5 to 10	40
Potassium chlorate (poison)	4	20	5	30	6	40
Pulv. Doveri*†	1½ to 3	6 to 10	2 to 4	10 to 12	3 to 6	12 to 18
[9]Radix Ipecac (as an emetic)	2	10	2½	15	3	18
Radix Senega	3 to 5	15	4 to 8	24	4 to 10	30
Resorcinum*	½	1	¾	1½	1	3
Santoninum.*	2	10	2½	15	3	20
Secale cornut. pulv.*	5	40	6	60	10	90
Sodium benzoicum						
Sodium bromatum* (like potassium bromatum)						
Sodium iodatum* (like potassium bromatum)						
[10]Sodium salicylate.						
Strychninum*† (its salts), subcutaneously and internally.	1–60	1–20	1–40	3–40	1–30	1–10
Syrupi ferri iodati.	10	30	15	45	20	60
[11]Tartarus emeticus (as emetic)*	1½	3	2½	5	3	6
Tinctura belladonnæ*						
[12]Tinctura ferri pomati						
Tinctura opii						
Tinctura opii crocata*†	2	5	3	8	4	10
Tinctura ratanhiæ	5	10	7	15	10	20
Tinctura rhei aq. and vinosa	10	25	15	40	20	50
Tinctura strychni (nux vomica)*†	2½	8	3	12	5	15
Turpentine oil	3	12	5	15	7	20
[13]Turpentine oil (in diphtheria)						
Ung. hydrarg. (mercurialis) cinerei (friction)		16	.....	20	.....	30
Xylolum	3½	18	5	20	7	28

[1]Not to give at all to children under two years of age.
[2]Several times a day.
[3]Pro die (i. e., twenty-four hours as many grains as the patient is years old).
[4]One to 2 grains pro dosi every ten minutes if needed (children 2 to 12 years of age.)
[5]As the powder of opium.
[6]One-fourth smaller doses than the preceding remedy.
[7]Gradually increasing the dose, one may give twice and three times more than is here indicated.
[8]As many drops a day as the patient is years old.
[9]Three to five grains every ten minutes if needed.
[10]Pro dosi, so many grains as the patient is years old, four to six times a day.
[11]1–4 to 1–3 of a grain every ten minutes until vomiting occurs.
[12]Twice as many drops a day as the patient is years old in two or three doses.
[13]Half a teaspoonful, teaspoonfuls or dessertspoonful.

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